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ABSTRACT

This publication contains the proceedings of a symposium concerning the liberal education of architects. The papers and addresses included are: "Prefatory Remarks to the Symposium" (S. Grabow); "Keynote Address" (W. McMinn); "Invited Position Papers" (D. Ghirardo; J. Hartray; R. Bliss); "A Liberal Education for Architects" (R. Allen); "On the Liberal Education of Architects" (N. Clouten; C. Jetter); "Architecture and the Liberal Arts: A Case Study in the Acquisition of an Education" (J. Coddington); "From a Historian's Point of View" (H. Cooledge, Jr.); "Who Should Shape Architectural Education? The Liberal Arts Graduate" (D. Domer); "A Definition of the Comprehensivist" (W. Drummond); "Learning From the Liberal Arts" (E. Dunham-Jones); "A Liberal Education for Architects" (P. Fast); "The Liberal Education of Architects: A Reflection" (H. Gottfried); "Defining Liberal Education in the Context of Architectural Education" (L. Groat); "Should an Architectural Education Require or Include a Prerequisite and Formal Liberal Education" (A. Johns, Jr.); "Clarity, Reflection, and Accountability: The Nature of Architectural Education" (M. Malecha); "Somewhere Over the Rainbow...A Liberal View of Architectural Education" (G. McSheffrey); "Communication Approach in Architectural Education" (A. Minai); "The Disciplined Imagination: A Case for the Emancipation of Architectural Education" (M. Quantrill); "Aspiring to Liberal Education" (G. Richardson); "On the Liberal Education of Architects" (C. Sanchez); "Thoughts on Architectural Education" (D. Sander); "The Practice of Placemaking and Placetaking as a Liberal Art" (R. Shibley); "Some Notes on the Liberal Education of Architects" (A. Stamps); "The Liberal Education of the Architect" (W. Steward); and "The Architectural Education of the Liberal Arts Student" (R. Vickery). A bibliography and list of symposium participants also are included. (DB)

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A Symposium Sponsored by the Graham Foundation for Advanced Studies in the Fine Arts

The University of Kansas
School of Architecture and Urban Design

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THE LIBERAL EDUCATION OF ARCHITECTS

A Symposium Sponsored by The Graham Foundation for Advanced Studies in the Fine Arts

November 8-9, 1990

The School of Architecture and Urban Design
The University of Kansas

Lawrence, Kansas

Proceedings Edited by

Dennis Domer
Associate Dean

Kent F. Spreckelmeyer
Associate Professor

THE LIBERAL EDUCATION OF ARCHITECTS

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Dennis Domer
Kent Spreckelmeyer

Lawrence, 1991

Introduction

In the fall semester of 1989 the School of Architecture and Urban Design at the University of Kansas admitted the first students to the new Bachelor of Arts (B.A.) in Architectural Studies Program. The purpose of this program is to provide undergraduate students with a liberal education focused on the issues of environmental design and human settlements. It is not an accredited professional degree in architecture, but can provide students the necessary background to enter a three or three-and-a-half year master of architecture program. The initiation of this new B.A. degree was a significant event for the School because it established the foundation for a comprehensive plan to link the undergraduate and graduate programs in architectural education. For a number of years the faculty at the University of Kansas has been attempting to clarify the professional and academic mission of its architectural programs. In the spring semester of 1990, a special committee formed by Professor René Diaz, Chair of Architecture, published a report that outlined a set of objectives to strengthen the professional design curriculum and at the same time increase the quality of academic offerings in the undergraduate and post-professional programs. During the preparation of this report it became apparent that the debate occurring within the faculty about charges to the curricula at Kansas should be enlarged, and opinions should be invited from wider professional and academic communities. The purpose of this symposium was to bring together a group of designers and architectural educators to participate in this wider debate.

The Graham Foundation for Advanced Studies in the Fine Arts agreed to sponsor the symposium through a grant. We decided early in the planning of this event not to constrain the discussions by defining specific curricular issues in design education. Rather, two fundamental questions were posed to the participants to provide a general conceptual framework within which an open exchange of ideas could occur. These two questions were:

- Should students of architecture be required to have a broad and liberal university education before beginning professional training?

- Can the study of architecture itself be viewed as an appropriate discipline through which a liberal education can be achieved?

Obviously, these questions were posed in the context of a national debate concerning the efficacy and purposes of American educational institutions.

The past ten years have been crowded with critiques and evaluations of higher education in this country, especially in terms of how education prepares the student to participate in rapidly changing and complex professional worlds. The institution of the "Core Curriculum" at Harvard, declining college-entrance test scores, influential commentaries by Allan Bloom, E.D. Hirsch, and Page Smith, and media attention on falling educational standards have charged the atmosphere of American education.

The debate within architectural education has been infused with pressures from the professional and political establishments. The American Institute of Architects (AIA) devoted a large portion of the study "Vision 2000" -- a comprehensive evaluation of architectural practice and its role in the new century -- to educational issues. In general, the report raised the question "What will designers of the built environment need to know in the future that they have not known in traditional architectural practice in the past?" At the same time this question was posed, a number of state legislatures began to question the statutory limitations of architectural practice. The licensure of interior designers, for example, begins to call into question who the architect is in the building process. These political pressures on architectural practice tend to reinforce the findings of Professor Robert Gutman and begin to lend some weight to the term "Exterior Designer" as the primary functional definition of the post-modern architect.

The organizers of this symposium take the position that any revision to an architectural curriculum should strengthen the view of the architect as the enlightened and responsible generalist in the construction industry. In 1983 a number of the faculty at Kansas collaborated with the Kansas Society of Architects to find ways that design education could be improved to strengthen the architect's position in the building industry. As part of that process, a detailed survey was administered to members of the Iowa, Nebraska, Kansas, Kansas City, and St. Louis AIA components in order to measure practitioners' perceptions about how their professional education had prepared them for practice. One of the most striking findings of the study was the relatively high levels of dissatisfaction that the architects had in terms of their education outside traditional architectural curricula. They were especially critical of their lack of preparation in writing and public speaking skills, an appreciation for world cultures, and an understanding of moral and ethical values.

Not surprisingly these issues are central features generally associated with a liberal university education. As Dean Henry Rosovsky of Harvard observed, five key hallmarks of such an education should include:

1) The ability to think and write clearly;
2) A depth of knowledge in a particular field of study;
3) The ability to apply knowledge and to continue to learn throughout life;
4) The ability to understand moral and ethical problems; and
5) An understanding of history and other cultures.

The key question that this raises is the degree to which a traditional architectural curriculum can satisfy the dual needs of liberal education and professional training. Although a number of programs of architecture in North America are focused solely on a post-graduate degree (M.Arch.), the traditional approach has been to combine liberal arts courses into professional schools of architecture and to admit students to design programs directly from secondary schools. This is true not only in the Bachelor of Architecture (B.Arch.) degree but also in a majority of the masters programs that utilize the undergraduate degree (i.e. B.A., B.E.D., B.S.) as a preparatory pre-design training that seldom contains all the language, science, and humanities courses associated with the traditional liberal arts curriculum. A salient feature of the architectural programs in North America is the lack of any commonly recognized model that prepares the student for architectural practice. Many models exist, ranging from the traditional five-year B.Arch. programs to the three and one-half year post-graduate programs that can be entered only after the award of a liberal arts degree. Recently, a number of universities have petitioned the National Architectural Accrediting Board (NAAB) to allow schools to offer the doctorate in architecture as the first professional degree. This issue, which is really only marginally relevant to the questions posed by this symposium, promises to confuse even further the central issue of what the architect of the twenty-first century must know to practice effectively.

In order to address these various academic and professional issues, the architecture faculty at Kansas approved a series of recommendations that would revise the existing professional curricula. These recommendations are presented here not as a definitive outline for ideal models of architectural education, but rather as guiding principles that set out the major goals for design programs in a rapidly changing professional world. The three major recommendations are outlined below.

- Use the new B.A. in Architectural Studies Program to provide a rigorous liberal education for students who have general interests in the built environment. The School should view itself as a full and active member of the larger university community and should structure its undergraduate degree programs to reflect the mission of a comprehensive research and teaching university. Architecture is an academic discipline that attracts the interest

and dedication of a wide range of undergraduate students, both those who want to make a career of architecture as well as those who wish to seek parallel careers in history, preservation, energy studies, ecology, law, and business. The current B.A. curriculum consists of the following courses:

First Year, Fall Semester (14 hours)

ENGL 101 Composition	3
MATH 115 Calculus I	3
ARCH 103 Introduction to Architecture	3
Foreign language	5

First Year, Spring Semester (15 hours)

ENGL 102 Composition and Literature	3
PHSX 114 College Physics I	4
Humanities elective	3
Foreign language	5

Second Year, Fall Semester (18 hours)

ARCH 240 History of Architecture: Ancient & Medieval	3
ENGL (third-level English course)	3
WC 234 Western Civilization I	3
Oral communication or logic course	3
Humanities elective	3
Foreign language	3

Second Year, Spring Semester (15 hours)

Architecture elective	3
WC 235 Western Civilization II	3
Natural science or computer science	3
Humanities elective	3
Foreign language	3

Third Year, Fall Semester (16 hours)

Architecture electives	6
ARCH 380 Architecture Workshop I	4
Interest electives	6

Third Year, Spring Semester (15 hours)

Architecture electives	6
Non-Western culture course	3
Social science elective	3
Interest elective	3

Fourth Year, Fall Semester (16 hours)

Architecture electives	6
ARCH 381 Architecture Workshop II	4
Social science elective	3
Natural science elective	3

Fourth Year, Spring Semester (15 hours)

ARCH 480 Senior Seminar	3
Architectural elective	3
Social science elective	3
Interest electives	6

- Concentrate the professional architectural curriculum at the masters level. This action will strengthen the emphasis on the graduate mission of the School and will bring architecture in line with other postgraduate professional programs. The trend nationally toward the acceptance of the M.Arch. as the first professional degree has accelerated during the past decade and is due in large part to the recognition that practice in the twenty-first century will require a sophisticated and specialized knowledge base. The proposed M.Arch. curriculum is as follows:

First Year, Fall Semester (15 Hours)

Visual Thinking Studio I	3
Building Technology I	3
History/Theory of Architecture I	3
Graduate Studio I	6

First Year, Spring Semester (18 hours)

Visual Thinking Studio II	3
Building Technology II	3
Structural Systems I	3
History/Theory of Architecture II	3
Graduate Studio II	6

Second Year, Fall Semester (18 hours)

Graduate Studio III	6
Structural Systems II	3
History/Theory of Architecture III	3
Bldg. Elec. Systems & Acoustics	3
Site Planning	3

Second Year, Spring Semester (18 hours)

Graduate Studio IV	6
Structural Systems III	3
Computer-Aided Design	3
Bldg. Mech. Systems	3
Professional elective	3

Summer Session (Siena, Italy) (9 hours)

Graduate Studio V	6
History/Theory of Architecture IV	3

Third Year, Fall Semester (15 hours)

Graduate Studio VI	6
Construction Documents	3
Professional Practice	3
Professional elective	3

Third Year, Spring Semester (15 hours)

Graduate Studio VII	6
Professional elective	3
Professional elective	3
Construction Technology	3

- Establish a post-professional graduate program that leads to a doctorate in architecture. In order to meet the future demands for specialized education in such areas as architectural management, building economics, international and cross-cultural practice, and emerging building technologies, architectural education must create a more effective and responsive research program within the university setting. This is a matter of importance that will set the standards by which our clients and society judge our ability as a profession to define and solve complex environmental problems. Increasingly important is also the demand placed on schools of architecture by the universities to increase their participation in funded research, community-based practice centers, and scholarly publication. Architecture programs must continue to place themselves in positions of strength and excellence in order to compete for limited resources in higher education.

On the surface, these recommendations may seem radical or overly ambitious to the profession. In fact, they are merely a reflection of what has been happening at the University of Kansas and many other institutions in a steady educational process of change. Schools have received a steady flow of applications from students who want to enter the architectural profession, but also from students who want to approach the study of architecture as an academic discipline. In the second year of the B.A. in Architectural Studies Program at Kansas, 15 new students were admitted, and all indications point toward a steady increase in enrollments. The institution of this non-professional program merely confirms the growing interest in architecture as a scholarly pursuit and satisfies a demand from the larger university community. Similarly, the establishment of a graduate professional design degree would ratify in principle what is currently happening in many schools of architecture. Each year since 1983 approximately 20 percent of the B.Arch. degrees at Kansas have been conferred on students enrolled in the Accelerated Professional Program and who entered the curriculum with a baccalaureate degree. As the demand for professional programs from non-traditional student populations increase, universities must be prepared to move away from the traditional view of design education as a self-contained and isolated body of knowledge. The history of the graduate programs at Kansas since 1980 reinforces the move among schools of architecture to establish doctoral degrees for post-professional research. Student research projects in the Built Form and Culture, Urban Design, and Management/Practice masters options, as well as projects completed by undergraduate students working in well-defined research programs, have won honors consistently since 1984 in the Association of Collegiate Schools of Architecture (ACSA) Student Research Competitions. It is apparent that a high degree of student interest and enthusiasm has been fostered by these programs of research, and that these early efforts in emerging fields of design research only begin to tap the creative potential in design schools.

The symposium, therefore, was the culmination of a long process of curricular change and faculty debate. Four individuals were invited to lead the discussions and frame the debate to address the two questions outlined above. William G. McMinn, FAIA, the Dean of the College of Architecture, Art, and Planning at Cornell University, was asked to deliver the keynote address. Dean McMinn was chosen not only because of his long-standing experience in architectural education, the NAAB, and ACSA, but also because Cornell and the University of Kansas are similar in the ways that architectural curricula and professional design programs are integrated into the university setting. Professor Robert L. Bliss, FAIA, of the University of Utah

Graduate School of Architecture, was instrumental in establishing a graduate curriculum at Utah in the early 1970s. He brought to the symposium a unique perspective on the academic and political realities of achieving educational excellence within the constraints imposed by a state-funded university. Jack Hartray, FAIA, is a principal in the Chicago firm of Nagle Hartray and has been a persistent and vocal critic of the academy's role in design education. Mr. Hartray is recognized widely as a practitioner committed to improving the quality of environmental design and enhancing the role of design education. Diane Ghirardo, Ph.D., is Associate Professor of Architecture at the University of Southern California and currently serves as Executive Editor of the *Journal of Architectural Education*. She provided a view of architectural education based not only on her own experience as a faculty member, but also as a scholar and critic of the theoretical foundations that underpin design curricula and philosophies.

The proceedings that follow are a chronological outline of the symposium. The introductory statement by Stephen Grabow and the keynote address by Dean McMinn set the tone for the symposium. The responses by Diane Ghirardo, Jack Hartray, and Robert Bliss begin to stake out specific points of view that tended to guide the discussion that followed in the open debate session at the conclusion of the symposium. In order to create a uniform format for the proceedings, all references cited within the various addresses and position papers are collected together in a single bibliography.

"Sailboats and Sonatas: Prefatory Address on The Liberal Education of Architects"

Stephen Grabow, Ph.D.
The University of Kansas
School of Architecture and Urban Design

When we discussed the idea of the symposium and the possibility of my taking a part in presenting views, I knew immediately that I wanted to focus not so much on the importance of a liberal arts education, or on the role a liberal arts education plays in an architectural education but rather, on the actual content of the liberal arts and how I believe it is intimately related to architectural knowledge. In fact, I find them inseparable and that will be the subject of these remarks. Let me start by indicating what I believe to be the essential characteristic of architectural education; that is, what we give students that I believe is distinct from other disciplines or other fields. Although one might phrase it differently, I think you would agree that what architects do with great facility is conceptualize spatial relationships in their heads and represent them formally. You could say it's an essential skill and the focus of most of their training; but we also know that architectural education involves more than just the transmission of such skills. It often involves learning a particular way of seeing the world — a way that's distinctually form-oriented in its breath and its depth of perception — although it is transmitted more as a process of socialization in which various attitudes, values, facts, methods, anecdotes, references, beliefs, and so on, are acquired by students in the course of their interactions with faculty.

Joe Esherick put it nicely when he said that architectural instruction is mostly nondidactic; that is, it involves an exchange between student and teacher in which each reacts anew to what the other has done or said rather than by the serial dissemination of information. We all know that the process is time-consuming, labor-intensive, often redundant, inconsistent, and seemingly inefficient to university administrators. It is, however, amazingly effective and internationally wide-spread in transmitting what you might call the basic outline and structure of architectural thought; that is, of the constellation of beliefs, facts, values, theories, methods, and approaches, rather than of a specific technique or style of building. Certainly most architecture schools today would not like to think that they promulgated a particular style or technique of building; but rather, that they are transmitting something much broader. Consequently, there are very few textbooks in architecture, and most of them are technical or historical in nature. There are, however, a great number of what you might call analytical source books which stimulate the ability to conceptualize spatial relationships and represent them visually from a number of different points of view. These different points of view correspond to the diverse foundations of the field. Unlike many other fields in which you could trace the intellectual foundations to a fairly tight body of knowledge, architecture draws upon many seemingly unrelated intellectual sources for this constellation of knowledge. An architect's bookshelf, for example, is likely to contain an almost equal number of titles in such diverse subjects as biology, sociology, technology, psychology, aesthetics, or history. The references, and their relationship to architecture, are passed on informally as part of the socialization process and nondidactic instruction which we receive in school. The result is that without any overall coordination or attempt to organize curricula, architecture students all over the world develop remarkably similar conceptual orientations. (I always like to point out that architects are perhaps the only people I know universally who like guided tours of factories — especially if you have gone on a tour of the River Rouge plant of the Ford Motorworks near Detroit and get absorbed in the process of "becoming" that goes on there.) I find this is true just about everywhere. There are remarkably similar orientations we have to the world, regardless of what country we seem to come from. I have been lucky to travel around a lot and live and work in other countries and I'm always astonished by the similarity in the way architects look at things. It's not surprising, if you consider that the overall paradigm which we're trying to communicate is essentially the same; but it is

startling that such an informal process of education can generate similar results in both Des Moines and Copenhagen — as if both were part of some larger hermetic circle of thought which we can't see. The great Jesuit paleontologist and philosopher, Pierre Teilhard de Chardin, coined the term "noösphere" to describe the layer of thought that was generated by people's consciousness and which surrounds the planet and he believed that it had physical properties, like the atmosphere or the stratosphere. I'm not certain if architectural thought has any such properties, but it seems remarkably like Teilhard's noösphere in its ability to unify diverse points of view.

Let me give you an example of what I mean about a certain kind of orientation. Most architects are either taught or socialized into having a sense of social responsibility and to safeguard the environment. What's not immediately clear is that the sources for this characteristic go beyond just a philanthropic concern for public welfare. I don't mean to suggest we're not philanthropic, but I do think that the origins for many concerns like social responsibility and environmental safeguard are actually rooted elsewhere. Particularly, they are nurtured in conceptions of form that are related to ideas about nature, about the mind, about process, about the structure of society, and ultimately about beauty.

Safeguarding the environment, for example, is directly related to ecology which is related to systems theory and holism and to the whole philosophical school represented by Whitehead and also to the Gestalt school of cognitive psychology and its connections to perception and form. It's also directly related to the study of nature and its connections to morphology and to the analytical approach of D'Arcy Wentworth Thompson, whose book *On Growth and Form* is on more bookshelves than I could estimate, and to the natural philosophy represented by Whitman and Thoreau, as well as to the organicism of Ruskin, Morris, Sullivan, Saarinen, and Wright. There are, in the bodies of thought just mentioned, ten very significant reasons for an architect to be seriously interested in safeguarding the environment. Every reason leads to a richer more meaningful, and truer conception of architectural form from so many different points of view. But form, as well as philanthropy, demands it.

Let me mention another example, this time with regard to social responsibility. The whole idea inevitably puts you in touch with the concept of the structure of society and all of the knowledge systems that go behind that to utopianism, to social criticism, liberation philosophy, and so on, and the relationship between that and aesthetics in, for example, vernacular architecture, geomorphism, a concern for mental health and various psychologies, whether "actualization" psychology or, again, Gestalt psychology. And it puts us in touch with the questions of the role of people in society and leads to various forms of social philosophy, such as existentialism, and the whole idea of things being authentic or unauthentic and their connections to aesthetics. So just social responsibility and safeguarding the environment are connected to twenty different bodies of thought I've mentioned, each with rich, meaningful, and true conceptions of form.

So, this is what you might say represents a slice through the body of the liberal arts knowledge from two architectural points of view. It is this body of knowledge that I want to discuss because it occurs precisely at the intersection of architecture and the liberal arts, at the point at which architectural thought and the arts and sciences coincide — where they're congruent. There's a term in Gestalt psychology to describe the idea of similar structural relationships occurring in different media known as "isomorphic correspondence." In psychological quarters, it refers to the relationship between our perception of order and the underlying structural processes in the brain. So let me give you examples of my own isomorphic correspondence experiences. The first concerns sailboats.

When I was a student in architecture school I remember becoming aware of sailboats and sailing as something worth knowing about. Some of my

classmates simply knew about it from their youth and made the connection to architecture more quickly; others like myself, a New Yorker, picked it up a bit more slowly. Anyway, I was lucky. My roommate sailed. In fact, he had been racing since he was twelve years old and knew quite a lot about the subject. But his understanding was a mixture of his own experience, a bit of sailor's lore, and some vector analysis. It didn't actually explain why boats sail, although it did explain how to sail them — and that experience appears to have incredibly strong aesthetic properties which incidentally are expounded upon at great length by Francis Bacon, William Hogarth, and John Ruskin.

There's a wonderful book by Edward DeZurko, *The Origins of Functionalist Theory*, in which he goes through a lot of the literature of people like Hogarth, Bacon, and Ruskin and shows the connection between these people's appreciation of sailboats and the idea of beauty being equated with fitness and the concept of achieving variety within a uniform shape. And so there's a whole aesthetic realm here connected with sailing. It was, however, Bernoulli's principle that was a wonderful revelation to me. Bernoulli was a physicist whose principle states that if a moving stream passes across a column of air or liquid, the pressure is reduced over the column — as if the force of the stream going over it "pushed aside" gravity momentarily. The classic laboratory experiment is an atomizer. You have a column of liquid, which is the glass bowl, and you have a tube across it, connected to a softbulb, and when you squeeze the bulb you pass air over the column of liquid. Suddenly the liquid is sucked up and sprayed out the tube because the air pressure on top of the column of the liquid was reduced momentarily and the higher air pressure sort of "pushes" what's in there upwards. It doesn't actually suck the liquid out. The liquid is pushed out by the reduced air pressure. Most of us experience this in laboratory physics but it's usually not connected to anything else. Except, of course, that this is the origin of not just hydrodynamics, but aerodynamics. And so Bernoulli's principle actually accounts for how airplanes fly because instead of a stream of water you have a stream of air over slower air which is right on top of the airplane wing. If you imagine a shape with air passing around it, and if the speed across one surface is the same as the other, you won't get the Bernoulli affect. But if the air were slightly faster, over one surface, you would get the perfume atomizer effect and the thing would be "pushed" up. So, of course, the shape of an airplane wing in section has more surface area on top then it does on the bottom so the air, in order to catch up with itself at the end, has to go faster over the top surface and this causes the "lift" of the airplane wing.

Now in sailboats, the curvature of the sail forms the surface across which the air flows faster, "pulling" the boat in a direction amazingly perpendicular to the wind — or nearly perpendicular to the wind. By pointing the sail just slightly off the oncoming wind, a force will be generated that, although perpendicular to the wind, is "forward" relative to the direction the boat is pointing. That's where vector analysis comes in. If you remember from Statics and Strength and Materials that you can resolve horizontal and vertical vectors ultimately into one resultant force, then the force left tends to pull the boat seemingly forward. (One vector is negated by the center board or the keel.) And if you've ever sailed, the moment at which you bring the sail into the proper aerodynamic curvature, you literally feel a lurch, and it's as if you've sort of entered into nature at that moment and somehow, through manipulating form, achieved intimate contact with the forces out there. And so we get from this the concept of optimal design or optimal configuration, because in sailing both the sail and the hull need to be able to react to constantly changing wind speed, wind direction, water currents, water surface conditions; and by optimal one means the ability to get maximum harnessing of those forces with the least expenditure of energy. In the case of boat design it means the least amount of material. It turns out that the optimal curvatures in wood produce particularly pleasing forms — forms that are directly appealing to the eye, regardless of whether or not one understands Bernoulli's principle. Painters and poets and other writers have

long been drawn to the beauty of sailing vessels. But the idea that optimal design in general has special properties is the province of a line of thought that precedes not only modern scientific thought, but you could say is the basis of science itself.

The fascination for form in general, whether in the world around us — what we tend to call nature — or in the larger picture, the universe, our interaction with this is the basis of all science and mathematics since Socrates, Plato, and Aristotle. You could say a fairly straight line through that body of thought connects directly to the recent discoveries of the structure of DNA molecules. But it's an indirect line that connects it to architecture. And as I suggested before, that line perhaps connects D'Arcy Thompson's wonderful book about why moths fly in spirals and why the nautilus shell contains a logorithmic progression to the recent book which Charles Moore alluded to in a conference a couple of years ago, the book called *Chaos*, that describes the discovery of fractal geometries. The author of that book doesn't really discuss architecture, except that at one point he pays an unconscious tribute to this orientation that architects have about form. He says that "architects no longer like blockish skyscrapers because they do not correspond to the way the human mind perceives the world or the way nature organizes itself." That struck me as an amazing statement coming from a layperson regarding architecture. I think I was startled to realize that other people see that architects do attempt to see the world in ways beyond just putting together the skin of a building. And to round off that connection between sailboats and design and the connection to science I would mention the series of books that were published by Gyorgy Kepes between 1963 and 1966 called the *Visual and Value Series*. It is a wonderful collection of articles and illustrations that show how much design is part of art and science and the achieving of a seamless fabric between them.

There are many forces acting on the design of buildings today and very few of them lend themselves to optimal design in the way that Bernoulli's principle affects sailboat design. Nonetheless, the unattainable goal represents a standard against which great architecture is measured. (I think of Peter McCleary's article about the roof of the Kimball Art Museum and why that's such a correct shape, and he basically is drawing upon the underlying assumption that optimal design is good and is the state of the art of structural design in architecture.)

The second example I want to give of a sort of isomorphic correspondence between architecture and the arts and sciences is perhaps more emotional — as the arts are. You could say that the Bernoulli connection in sailboats summarizes for me architecture's connection to science, although there are obviously strong aesthetic principles involved. But I think that on the artistic side, the connection for me is through music. At first blush that might seem curious because music appears to be an essentially nonvisual phenomenon, where sailboats are, of course, these tangible objects.

Unlike sailboats, however, I was already familiar with music, but again, the connection to architecture, in my experience, was only hinted at. It was said, for example, that Frank Lloyd Wright wouldn't hire anyone who didn't appreciate classical music and that he had it piped into the drafting studios at Taliesin 5 to 6 hours a day. When you read Wright's autobiography as well as some of the books about him, especially Norris Kelly Smith's book and Robert Twombly's book, you find out that the connection goes much deeper than just liking music — it had to do with the structural similarities. In other words the connection had to do with the isomorphic correspondences that Wright believed linked musical composition to building design. It turns out that this connection goes back much further than Frank Lloyd Wright. Tracing it back through the 19th- and 18th-centuries to the great Renaissance tradition and theories of harmony and proportion and to the ancient speculations of Plato and Pythagoras is a fascinating intellectual journey covering much of the history of architectural thought, and obviously more than could be conveyed by just piping music into a

design studio.

But the importance of the connection between architecture and music is, for me, twofold. First, and perhaps most obvious, but rarely explained in detail, is the similarity of formal relationships. The idea of rhythm, harmony, proportion, alternation, repetition, variation, and many other principles of composition are common to both fields of expression. But unlike painting, sculpture, and the other visual arts, architecture shares with music and perhaps dance the similarity of a prolonged temporal dimension. Both forms are experienced through comparatively long and repeated periods of time.

Perhaps the second connection, less obvious but I think even more important, is the similarity of range of emotional content. The power of music to give form to so many different levels and kinds of human emotion — from the ordinary to the sublime — is mirrored more in architecture, I think, than in the other arts because architecture is so much more a part of everyday life than the other arts. Both music and architecture attempt to transform the everyday, the simple everyday situations of our existence into something more meaningful than it might otherwise be. There's a famous quotation by Suzanne Langer on what music does. She says to us:

> Music presents the forms of feelings, the tensions, ambiguity, the contrasts, the conflicts that permeate our feeling life, but which do not lend themselves to description in words or logical formulas. Music has a way of giving form to those feelings that cannot be expressed in other ways.

I always liked that statement because in just a few words, Langer has identified the essential characteristic of music and its potential value. Its greatness is its ability to give shape to our feelings. Great shapes, great feelings. It even evokes the feelings. And by giving shape to them, we experience them in a new way, a way removed from the constraints of everyday behavior, free of attachment.

Music is enjoyable because through its shapes we can experience feelings without the problems attached to those feelings. Our response to them is therefore different, than it would be in some other context, whether interacting with other people, or contemplating in silence, or just day-dreaming. The response is more freely sensuous. And I use the word sensuous as pertaining to the senses, which is what aesthetics means. That is, we just feel the feeling more intensely, more physically. It's what Langer means by the phrase "giving shape to feelings". It is actually a physical articulation of the feeling — both in the response it invokes in us and in the medium of sound in which it's expressed.

So I thought about Langer's idea, and I wondered about pieces of music that I was familiar with, that I really liked or loved. And I applied this to some of my favorites and I realized suddenly why a composer like Beethoven, is considered a "humane" composer — a term that you would not ordinarily connect with musical composition. And I didn't know what it meant until I realized that it was Langer's idea of taking ordinary everyday human feelings and giving a shape to them, a shape that we could relate to but which puts those feelings "out there" so we can appreciate them as just a part of our existence, a part of being alive — but without the attachment. I can remember as a high school student being depressed at times but enjoying the depression. It had a kind of a romantic appeal to it. You could absorb deep feelings and somehow you could appreciate their aesthetic side. And actually this is what Langer is saying music does. It permits us to feel without the anxieties connected with those feelings, or the accelerated heart rate, or whatever. And so you might say that Beethoven approaches this notion of optimal design in a completely different way than Bernoulli.

Beethoven is noted in musical circles for being a master of motivic development. This is, taking a motif, the smallest unit of music, other than a note

— a few notes, constituting a fragment, a little phrase — and evolving long paragraphs out of the tiniest motifs. He could also do it in such a way that the relationships in the music between very small things like a three-note phrase and very big things, was simultaneous. Which is actually very similar to the architectural idea of working at different hierarchies of scale. But Beethoven's music is characterized by this mastery of, seemingly out of almost nothing, creating incredibly elaborate but compact structures.

In fact, one of his most celebrated compositions is the series of quartets he wrote at the end of his life. They're all based on a simple motif. Here we have a situation where arguably, at least in musical circles, perhaps the greatest piece of music comes from a simple motif out of which he shapes an amazingly vast structure of sound in which each part is composed with utmost compactness. And yet tremendous feeling is evoked, comparable to the tremendous feeling you receive when you trim a sail. The structure embraces six quartets totalling about three hours of music and covering a wide range of emotions. Upon first hearing, it seems so sparse, so minimal, so abstract, one almost imagines it could have been written in the 20th century. At the same time, one senses that it is a very rich structure. In fact, it takes repeated hearings to catch a glimpse of the seemingly infinite levels of understanding that these works inspire. Beethoven is here a poet who achieves, with great compression, the highest possible degree of meaning.

Much has been written about this particular music. So much in fact that it's easy to overlook it's most striking characteristic, which is that it happens to be incredibly beautiful. But its impact on other musicians — and consequently, the history of music — has been enormous. So I want to discuss just for a minute, at a microscopic level of analysis, this simple motif. Beethoven helps us here because over the last quartet, the last movement, he opens with a three-note phase, and he writes over the three notes, and its repetition, three words in German, "muß es sein?" Which means, "must it be?" And then the three notes repeat, and he writes "es muß sein!", it must be! He asks this question, "must it be?" and then says, "it must be!"

Most attempts to understand the meaning of these three words have focused on finding a referent for "It" in "It must be." What is the "it?" What is he talking about? Morse Peckham, in *A Tragic Vision*, explains that when you study Beethoven's life and his own thoughts on the matter, the "it" of "it must be" can be anything at all. It's not necessarily "fate" or "joy" or "destiny" or some "spiritual phenomenon." Rather, it's the ordinary, everyday confrontation between yourself and the circumstances of your existence — whether you're coping with a toothache, taking a walk and ducking under doorways to keep out of the rain, brushing your hair, accepting a compliment without blushing, or in his case, going deaf. In other words the ordinary stuff of life, and taking those moments and giving shape to the feelings associated with them and then transforming them and ultimately somehow finding order in the apparent chaos of living in the world and even "celebrating" it — a word incidently, which many architectural educators use when trying to talk about what it is you're actually trying to achieve at certain moments in the design of a building.

Curiously enough, this idea of giving form is the central thesis of Gestalt Psychology and which connects this whole line of thought not only to the 18th- and 19th-century tradition of thought associated with Goethe, Hegel, Schiller, Coleridge, and other contemporaries of Beethoven, but to the same principles of isomorphic correspondence that links Bernoulli and the entire scientific tradition to architecture. So in other words, we come full circle to architecture occurring at the fulcrum of the intersection of the arts and the sciences.

Now, obviously, I have chosen a very personal and idiosyncratic slice through that intellectual landscape represented by this body of thought. But regardless of how you tell the story, the body of thought is out there, it exists independently of my version of it and ultimately this tradition of thought is about greatness, or goodness, or excellence, or

any word that you use to describe the state of the art. And it must be transmitted to future generations of architects. As I say, in my case I came to it through architecture first, but I am unsure if that scenario works today. I have the sense that this tradition is not effectively being transmitted today -- and I doubt it's because of being out-of-date or some other fashion-oriented conception like that. Rather, I think, it's tied up to the assumptions underlying this symposium and which I believe will be addressed by Professor McMinn later this evening in his address entitled "The Crisis in Architectural Education."

"The Crisis in Architectural Education"
Keynote Address to the Symposium

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"In education, walks the future."
Alfred North Whitehead

Recently, I was meeting with some members of the real estate industry and one asked what I was "in". Remembering that line of Whitehead's, I told him I was in futures. He said that he had everything tied up in municipals, but he would appreciate any tips I had. I quickly learned that each person has his or her own futures.

A little over a month ago, I had the opportunity to address this year's entering class of freshmen in our college, and as I thought of the changes of recent times, it seemed as though this was an unusual time. This year's freshmen were sitting in a high school somewhere at this time last year deciding on their future, their college, and their future careers in a basically stable world, and probably wondering how they were going to pay for it. Since that time, in one year, the world has undergone one of its most rapid changes in recent history.

One year ago tonight we witnessed the collapse of the Berlin Wall and the demise of the Eastern Bloc which would have been unthinkable only a year earlier. We now face the prospects of a major war with escalating oil prices, forcing energy costs ever higher during a very cold winter. Not only are we about to go to war, but with an enemy that we had not anticipated. To this, add the unification of Germany into the largest nation in Europe and the third richest in the world. Then, there are the pressing problems at home such as AIDS, homelessness, pollution and environmental decay, drug dependency, crime and all forms of abuse, deterioration of the urban infrastructure, limited economic growth, prospects of a recession, and uneasiness in the financial markets of the world.

Education has ceased to be that secure haven it once was. One of our problems in higher eduction is increased public expectations about what universities should deliver, yet state and private resources are not forthcoming. The credibility of a college education has been questioned, and in fact in many quarters a college education is not seen as a passport to a successful life. This is the world we leave to those in college now at the end of this century. And our responsibility is to prepare them for their world in the next century, not this one. The *Wall Street Journal* had a cartoon recently that showed a candidate addressing voters with these ringing words:

"Confusing, dangerous times demand confusing and dangerous leadership."

I want to return to those entering 60 Cornell students and their 5000 cohorts entering architectural schools this year. They are the future leaders of our profession, and, in fact, they are the future of the profession. Will they be prepared as architects for a more diverse and concerned society? Will they meet the demands of emerging technologies? Can they cope with the realities of modern finance? Will they understand the complexities of contemporary architectural practice? Will their education prepare them for their future or does it prepare them for a world that no longer exists, or a practice that is but a memory of better and simpler times?

It may be important to contrast this decade with the same decade in the last century. In the 1890s, the country was recovering from a devastating civil war. There was a growing economy, a growing industrial base and a growing population, with plenty of land in which to grow. University systems were spreading through the country, and formal architectural education was being introduced within those systems.

This year Cornell celebrates its 125th anniversary and the Department of Architecture was one of the first to be instituted. Although MIT and the University of Illinois argue who had the first school of architecture, we know that Cornell is third and had

the first department of architecture in the country. The other two were options of the final years of civil engineering.

In light of our discussion concerning the relation between architectural education and liberal education, it may be worth taking a moment to consider the foundations of the education of the architect. Unlike medicine, law, or theology, architecture was not born in the university of the Middle Ages, but rather in the academies of art in the Renaissance. These academies first developed in Italy as the interest in classical learning became more important and, in fact, became a formalized method of extending the apprentice system of the architect/artist.

Already there was a connection between liberal education in classical learning and the education of the architect. These academies developed to promote the rules of art and design, as well as to provide a formal apprenticeship. The movement was carried to France, where in 1671 a separate school was established for the training of architects to meet the demand of the French court. This school was the precursor of what became the École des Beaux-Arts; arbiters of taste, rulers of design, and keepers of the royal flame of architecture.

The basic principles of the Beaux-Arts, the attention to the rules of composition, the pictorial presentation, the organization of plan, and the jury system, were the first roots of the American schools of architecture, carried like a seed by the American architects educated there who returned to practice in this country. This was transplanted to America, but not without some difficulty. One of the trustees at Columbia University wrote a fellow trustee concerning the proposed school. Writing in the quaint phrasing of the time, he stated:

> From the first inception of the School of Architecture, it was always my especial and most important design to combine with its instruction in Sanitary Engineering. As I was sensible that the architect's profession was mainly deficient in this particular branch as well as in Engineering knowledge, I dwelt on this in order that hereafter architects should be Sanitary Engineers.

Writing in 1908, one of the first faculty members at Columbia said, "It seems to me high time to break these leading strings of foreign influence and to develop our architecture, as our engineers have developed their engineering, independent of any foreign practice or foreign fashions." This was a message that Frank Lloyd Wright was to proclaim. Concerning the liberal arts in architectural education, Wright said:

> I believe if all our young graduates would follow such a program of university study and foreign travel, our national architecture would rapidly develop a freshness, a freedom, a self-reliance and boldness of style and expression which it now greatly lacks, and which dependence on Parisian models and training can never give it.

A.D. White, first president of Cornell, included the chair in architecture in his original plan of organization of the university 125 years ago. He wrote that he could "not imagine a university without studies in architecture." To a prospective student he wrote "There is no nobler or more promising profession for any young man who has a taste for it and a willingness to master it than that of the architect."

I believe that it is significant that he recognized the two basic principles for the study of architecture in that letter. The first is "taste" and indicates the necessity for motivation, and the second is the "willingness to master", which suggests he recognized the requirement of discipline as basic to the education of the architect. President White had the largest architectural library in America at that time and travelled abroad collecting architectural photographs which form the basis of the Cornell architectural library and the slide collection. I believe that his interest in the history of architecture and culture would have placed him on the side of

assuring a liberal education for the architect. In 1871, he hired the first professor of architecture at Cornell, which has remained a model for both the liberally educated faculty member and the teaching load required at Cornell. The Reverend Henry Babcock, a proper, liberally educated Bostonian architect, found time to direct all of the courses in architecture, design and erect three buildings on the young campus, and most importantly, conduct weekly services in the Episcopal church.

The point of these historical anecdotes is to remind ourselves that at the end of the last century architectural education had found two of its roots. First, it had taken the discipline of the Beaux-Arts, combined with the atelier system of the architect's office. Second, it formed an academic bond with engineering principles to create a university foundation for the education of the architect. It should be noted that liberal arts was not one of those basic roots. If architecture was described to be a bridge between science and art, liberal education was not required on that bridge.

While there has been modification to this system during the last hundred years, the educational process has not changed essentially. The first basic modification resulted from the German Bauhaus curriculum and its migration to the United States in the 1930s and 40s, which brought attention to abstract design principles, an awareness of the new industrial processes and materials, and a social consciousness unseen before in American architectural education. The Bauhaus system was another academy with its own rules and principles which gradually replaced the Beaux-Arts tradition, primarily at the foundation and basic design levels. It must be pointed out, however, that both schools required a rigorous general education and examination for admission.

Neither of these programs gave significant attention to a liberal education within their programs, and American universities found such courses somewhat suspect and unnecessary in the training for the profession of architecture. One early writer commented on architectural theory as follows:

> There are from week to week more formal discourses under the head of the theory of architecture, given mainly with a view to show how little value there is in speculation on these subjects, but it is worthwhile to spend a certain amount of time upon them, nevertheless, if only as prophylactic, as the doctors say, to prevent these young men from being run away with by such fancies at a later day.

This suspicion of theory was prevalent within the early schools, as these schools were simply extensions of ateliers or offices with engineering courses and freehand courses added.

The rapid growth of the schools of architecture began in the middle of this century and was associated primarily with the growth in the profession after the Second World War and the economic surge following the war. Such education was usually limited to training for the profession, which included skills necessary to perform in the architect's office, an internship which assured the continual attention to performance of skills, and an examination for licensing which was limited to the protection of the health, safety, and welfare of the citizens in each state. In the last ten years, however, more attention has been paid to the relation between the learning of architecture for a career and the learning of architecture as a way of learning. There is a distinction between the two.

Design studios throughout this century have remained the primary center of an architectural education, but the orientation has moved away from training for building design to design explorations. There are at least three movements which sought to redefine the studio as a formal method of education. The first insisted that mathematical models could solve design problems and provide problem-solving methodologies. The second, responding to the social concerns of the 1960s, turned studios into centers for social action and advocacy for the poor and minorities. The third, following the social science models, attempted to use research methodologies to study individual and social behavior,

while trying to provide an empirical base for architectural decisionmaking. None of these have developed into a significant alternative to the traditional design studio, but all three do suggest the qualities of a liberal education within the design studio.

The authors of the "Architectural Education Study of the Northeast Schools" pointed out in 1981 that the durability and pervasive influence of the studio in architectural education has long attested to its strengths. However, it can also be observed that studio courses have been difficult to integrate into the larger curriculum and academic processes of the university. That study also pointed to the most critical factor in the quality of architectural education, the teacher-student interaction. Perhaps in the absence of formal courses in liberal arts, the liberal education has been passed informally from generation to generation of architects by the great teachers in our schools. The role model of the teacher/critic is a pervasive one, especially at the undergraduate level. Although much is written about the design process, there are few teaching methods regarded as useful across many studios; there are few syllabi, references, standards, and other resource materials to guide teachers and students in the studio.

Perhaps a liberal education occurs best in the personal relations between faculty and students, students and students, as well as the extracurricular enrichment of exhibits, concerts, travel, lectures, and thoughtful discourse late in the evening in the local coffee shop or the famed all-night sessions in the studio. Perhaps it is here, in these activities that challenge the mind, the senses, and often the body, that students begin to recognize the world around them, and which become the foundation for the liberal education for the architect. Perhaps it is here, rather than the formalized packages of knowledge called liberal arts courses collected in hourly measure, that ensure a liberal education. No other discipline of education has this informal arena of discussion and inquiry; one which develops individual and group relationships and promotes an understanding of complex environments. It was Plato who said that the direction in which education starts a person will determine the future of his or her life.

That is the responsibility of education, and our lives in architecture have been formed by the attitudes established in the early years of studio life, not only faculty to student, but perhaps, more importantly, student to student. All of us remember the design instructor who touched our lives in that very special way and made us see the world in a new way, or the person who sat next to us in the studio and challenged our established ideas of the world. Could we have found that same relationship in the impersonal classroom? On the other hand, we have also had the great lecturer, who with fire and passion, intellect and knowledge, seared our souls and minds with brilliant oratory. It seems that, in the absence of books, we have personalized our education in architecture into a series of relationships which have served as the basis for our liberal education in architecture. Although there are many interpretations of a liberal education, I believe its essence is the education that liberates us from structures of rote learning and introduces us to processes of inquiry about ourselves and the world in which we move and live and have our being. Rather than liberal education, I submit that it is liberating education which raises the curiosity in us about the nature of the world, provides the discipline to pursue an idea, and develops the appreciation of clarity in its expression. One anonymous author wrote, "a liberal education is what you have left over after you have forgotten everything you have learned."

Recently, over a bottle of wine and a lengthy dinner with Colin Rowe, who is an emeritus faculty member at Cornell, we discussed the topic of liberal education in architecture. In response to my question concerning the difference between an English education and an American education, he replied that reading and writing seemed to him to be the primary difference. The enormous number of books to be read and discussed as well as the exhausting number of papers to be submitted for review provide the English student with the capabilities of language in its richness, its use, and its

power. When I asked him about the requirements of a liberal education for the architect, he thought a minute and said there should be two courses required of all architects. First, a history of ideas, how they develop, influence each other, and inform people and cultures. Second, geography, to understand the nature of the physical world, the sense of place, and relations between the environment and human development within it. A third possible course was the discipline of a second language, which enriches the first language in its use and expression.

I once asked the great educator, Lawrence Anderson of MIT, how he learned to speak and write so beautifully. Perhaps, I suggested, it just comes from living in Boston. He admitted that may have helped, but he gave far greater credit to that English architect who was such a great writer. I thought of Wren, Inigo Jones, perhaps Lutyens? "Thomas Hardy," was his reply.

Denise Scott-Brown said something of the same when she stated that while trying to help students make sense of urban information, she discovered that they could handle an unfamiliar and difficult subject more easily if she started with its history and showed how its ideas arose out of demands being made at the time. The formal processes of legal or medical education do not find their parallel in architecture. Those disciplines depend on precedent or measured experimentation with codified results, and are not similar to the experiential education of the architect with its loose use of precedent and its imprecise processes. The development of subjective judgments informed by history and disciplined by technology is the core of the architectural experience. The foundation of professional performance lies in the confidence of personal judgment based on education and experience. That education and experience must be adequate to the demands of the time, the complexity of its world and its society, and must be modified by external pressures for relevance.

Will the hundred-year-old form of the design studio, with its limited reality, its artificial environment, and its intuitive processes, be a satisfactory foundation of the profession of architecture for the next century? Can it provide an educational format to investigate the demands of complex functional relationships, the integration of rapidly multiplying technical systems, unclear and diffuse design standards, and precise code specifications and cost constraints? Or has it become a place of self-indulgent exhibitionism, an anachronism of a simpler time and simpler demands, and the temple for a mystical rite of passage? I have dwelt on the studio because I believe that it has formed the basis of liberal education for the architect for the vast majority of practitioners in this country.

A word should be said at this point about graduate programs that build upon the liberal arts education of the undergraduate years. These programs emerged to follow the models of medicine, law, business, and other professions, but have seldom fulfilled their intent of integrating design skills and vocabulary development with professional courses. The intellectual pieces of the program fit nicely with graduate-level investigations, and the maturity of the student provides a level of discussion based on the varieties of undergraduate backgrounds which enrich the program. Most of these programs surround their design curricula with seminars, both required and optional, to satisfy the professional requirements of structures, history, and, perhaps, professional management, as well as seminars in theory. When these programs require an undergraduate experience in design, it seems to me, they are more successful. The learning curve is lower, and the level of design performance higher. There is seldom an undergraduate experience that creates the base for visual education in design unless studios are taken for elective credit in the undergraduate years.

I have not spent time here tonight discussing graduate design programs as I find little direct relation between such programs and liberal education. Such synthesis normally occurs after graduation, when the reality of societal relationships and professional performance become paramount to the student's education. Medical education depends

upon an undergraduate foundation in the natural sciences, and business and law are built on the literary and analytical skills of the undergraduate in government, political science, and many general fields of education. I have not noted any negative impact on the professions of medicine, law, or business as a result of having had a liberal education prior to entering graduate professional programs. It often seems that the student is narrower after graduation from these schools than one completing a graduate degree in architecture, even when preceded by an undergraduate degree in architecture.

I trust it is clear that I believe the current mix between education and training comes in formal and informal relationships, in formal and informal environments, and with people and places that challenge the mind. It has been said that the mind is not a pot to be filled, but a fire to be lighted.

Let me conclude these remarks with five basic questions and concerns that I hope will set the agenda for discussions during this symposium. All of these questions are predicated on the assumption that change is a natural part of our educational systems. In his book, *The Reflective Practitioner*, Donald Schön quotes Harvey Brooks, the eminent engineer and educator, that the professions are now confronted with an "unprecedented requirement for adaptability". The dilemma of the professional today lies in the fact that both ends of the gap he is expected to bridge with his profession are changing so rapidly. The body of knowledge that he must use and the expectations of the society that he must serve are changing constantly. Both these changes have their origin in the same common factor—technological change. The problem cannot be usefully phrased in terms of too much technology. Rather, it is whether we can generate technological change fast enough to meet the expectations and demands that technology itself has generated. This places on the professional a requirement for adaptability that is unprecedented. Schön states that professionals are called upon to perform tasks for which they have not been educated; the niche no longer fits the education, or the education no longer fits the niche. The first question, therefore, is concerned with our ability to change our educational models to meet the unknown demands of the profession.

1. **Does the present form of architectural education develop the ability to adapt and accept change as inherent in the future of the practice of architecture?**

The second question concerns the nature of professional education within the university. I see a widening gulf developing between the profession and academia. Is the education of the architect being diminished as architectural education becomes a more academic discipline of inquiry and study? The growth of theory courses within the schools binds it to the university in an unprecedented manner. Connections to literary and philosophical areas are emerging as prime pieces of credibility to insure the position of architectural education within the groves of academia. Tenure, promotion, and humanistic areas of inquiry are replacing attention to professional performance.

2. **Will architectural education become an academic field of study, such as urban studies or environmental studies, to be followed by rigorous internships in quasi-educational/practice settings outside the university?**

The third question recognizes the narrowing frame of opportunity and involvement for the architect. The question relates to the traditional narrowness of the architect's education, which often separates the student from the university at large, the intellectual life of the university, and participation in the broader issues of student activity. I remember one university president characterizing the school of architecture as isolated as any monastery in the Middle Ages, going on about its own precious concerns with little relation to the world outside, speaking in its mystical language, and observing its own rites.

3. **Does this limited arena create a mind set and attitudes that become part of the life of the architect to the detriment of the ability to relate to society and its processes?**

The fourth question reverses the theme of this conference. The attention to the built and natural environments is a critical factor in the future of this country, even as it is to the world. Issues of energy, pollution, population growth, and urban decay all affect society, and as the university represents the future leaders of its society, would not the informed student be a better decision maker and a better citizen for the future if architecture was included in the general education of the university student? President Foote of the University of Miami has set as a goal of his administration the improvement of the physical environment of that university. Given the pressures on any university president at this time, I asked him why he was giving such attention to the campus. He told me that while he was a student at Yale, he had that famous course in architectural history under Vincent Scully. That course so affected him that he resolved that if ever he had the opportunity, he would be a responsible client to make significant changes in his environment. That is the result of future leaders gaining a liberal education in architecture. Our universities are full of future leaders in business, the law, and the government. Should not our schools make this commitment to the future?

4. **Should architecture become part of the liberal education for students of the university?**

The fifth and final question concerns the vision of the future. As we prepare for the next century, are we willing to recognize the global forces of society and accept the challenge to rethink the hundred-year-old model of professional education in architecture? Unfortunately, I see little experimentation in our present form of professional education, and I see little recognition of the global forces that affect our professional world.

5. **Will accreditation boards, licensing boards, and alumni boards assist the schools of architecture and encourage and, even insist on, innovation and experimentation towards a new vision of architectural education as it prepares for a new century?**

I was recently reminded that during the height of the Civil War, Abraham Lincoln signed the Morrill Act, which provided the legislative basis for one of the broadest educational experiments, the "land grant university". On that date in 1862 he said, "The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty and we must rise to the occasion. As our case is new, so we must think anew." I can think of no more appropriate words for our time than these of over a hundred years ago.

"Liberal Education: The Basis of a Contestorial Terrain"

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When I read the position papers submitted for this symposium, I concluded that I would be speaking primarily to the already converted. The majority of educators (nine) represented in this sample believe, as I do, that a liberal arts degree should be a necessary prerequisite to a course of professional education in architecture. Specifically, I believe that the undergraduate first professional degree in architecture should be abolished. Of the remaining eight position papers, five authors insist that the desired liberal education of the architect can appropriately take place in a five-year B.Arch. (first professional degree program) or in a four plus two program. In the words of one author, since we cannot be assured about the content and breadth of any one liberal arts program, the best "solution is to incorporate the goals of the liberal arts into architectural education." Try as I did, I failed to determine precisely the positions of the remaining three authors.

I find myself in agreement with the points outlined by the nine authors who favor the undergraduate liberal arts degree followed by a three or three-and one-half professional degree (the M.Arch). Some have pointed out that a liberal education provides a student with a better understanding of the society for which they will be designing architecture. As one remarked, if students are trained essentially to produce a commodity (more or less functional), they will never understand the full and complex ways in which the built environment is related to our society. The kind of reflective practice which Donald Schön proposes depends upon a critical awareness that in turn depends upon a wide background of the sort we typically associate with a liberal education, the critical apparatus that opens up different methodologies and ways of coming to terms with reality.

Many other cogent points have been argued by the authors of the papers for this symposium, but there are some issues raised by the five opponents which I believe must be addressed as well as some matters which none of the papers have addressed. Let me first let you know a bit about my background. I am a historian with a joint Ph.D. degree in history and humanities. In addition to four years full-time teaching of two versions of Stanford's Western Civ program, I have taught full-time at two architecture schools and part-time at another. One had a four-year environmental design degree and an accredited master's degree; a second had a five-year professional degree program and an unaccredited 1-1/2 year master's degree, and the third both a five-year professional degree and a 3-1/2 year master's. I developed an architectural history survey course at USC which meets General Education requirements and which draws students from elsewhere in the University. Finally, I am the Executive Editor of the *Journal of Architectural Education* (*JAE*).

The first year I was teaching at one institution, I taught an upper-division theory and criticism course for fourth and fifth-year students. I assigned approximately 200 pages of reading per week with two six-to-eight page take home examinations and one six-to-eight page paper. Just prior to the first examination, I discussed examination strategies with the students. I detected some unease in the class, and finally one student took the bull by the horns to explain to me that the class was in a state of high anxiety about the exam because they had never had to write a paper for any architectural class, nor had they ever had to read a book. Moreover, at this time, students were still able to complete most of the twenty percent of liberal arts classes required by the NAAB by taking film studies classes, so that even elsewhere in their college career, there was no guarantee that they would be reading or writing — let alone gaining a rich background in the liberal arts. The papers they wrote for me that semester spoke more eloquently to the absence of a liberal education than anything else could have. My response to them was simply that it was high time they started.

The reason for telling this story is twofold: one, despite the firm conviction on the part of many architectural educators that one can "incorporate" a liberal education into the Bachelor of Architecture degree program, it is obvious that this is not happening. Technical, historical, and professional practice courses essentially support the studios. Students are well aware that only their studio courses "count," and that when push comes to shove, time and energy must be given primarily to the studios. This they learn because of the insane number of units assigned to studio courses, because of the insane number of hours they are expected to devote to their studio work, and by exposure to the attitudes of their professors. All too often they are simply informed by their professors that the other courses do not "count." Most studios are conducted as tutorials, one-on-one sessions between student and instructor in which the subject is the material on the student's drawing board. Group juries of various formats occur more or less frequently. Rarely are reading, writing, and broad liberal studies required features of the typical design studio. And every exception that occurs only proves the rule.

The second point is a question: even if these liberal studies are incorporated into architecture curricula, who is to teach them? Before I became the executive editor of the *JAE*, I served four years on the Editorial Board and refereed manuscripts. I would say, that over the years (as a conservative estimate), I have reviewed over 350 manuscripts from architecture faculty of all ranks and specializations. Normally three referees (including me) evaluate each manuscript. Over 90% of all submissions are rejected the first time through, or sent back to the author for moderate to heavy revision. For many *JAE* Board members, this simply argued for a different strategy for publication: architects should be engaging in research through design, not historical studies. In due course, the *JAE* issued a call for design projects as a form of research and inquiry. Our invitation read in part as follows:

> *Within much of academia there has long been the sense that somehow architectural design work does not have legitimacy as research or scholarship comparable to other forms of research, such as experimental analysis and mathematical modelling. In discussions of what constitutes architectural research, there is generally the tacit assumption that research in architecture is properly directed toward the investigation of quantifiable phenomena and the more instrumental aspects of technology in their application to architecture. And if the definition of architectural research is broadened, it is usually to include theoretical and historical writings based on document and artifact research or the publication of built works. Design explorations and visually oriented investigations which fall outside these definitions are still viewed with much circumspection even by some architects and architectural educators. Many of us in architectural design hold the belief that the design and making of architecture together constitute an investigation not only into the immediate and important concerns of site, program, representation, documentation, budget and construction, but into the other areas as well. These other areas, often difficult to define, are where the architect can reflect upon and question the nature, meaning and implications of many issues pertaining to architecture, including those above-mentioned immediate concerns. Viewed in those terms, design is an act of critical inquiry and a legitimate form of research.*

The call for papers also indicated that the thrust of the projects should be defined by "theses" in architectural designs. Following this call for papers, I received fewer than eight submissions, of which no more than three or four even approached the kind of inquiry called for. This suggested two things to me. First, that most faculty are not undertaking this kind of research through design (I had initially expected an avalanche of projects). Second, that the kind of tutorial which I mentioned earlier is indeed what is taking place in most studios, largely practical or poetic in orientation, and not the kind of critical, integrative activity we seem to think is happening. To return for a moment to those *JAE*

submissions, although many times writing is a problem, far more often we find an inability to construct an argument, to articulate clear ideas, to develop and explore those ideas, to view them in a rich historical perspective, to examine them in relation to broader social or economic conditions, to analyze them critically. Part of the task of the *JAE* referees, in my view, is to work with authors to enable them to accomplish these goals. But the fact remains that the material which I receive does not inspire confidence about the capacity of the professoriate to instruct students about liberal arts subjects outside of design. Nor is there any reason that architecture faculty members ought to be expected to instruct students in material from other liberal arts subjects — this is why we have the rest of the university, who teach other fields, just as architecture faculty teach architectural design.

Nonetheless, the point remains that I am not convinced that the educational background of many current faculty members gives them sufficient access to other ways of interpreting the world, other research methodologies, other bodies of knowledge, to enable them to make those explicit kinds of linkages in their studio and support courses — which depend upon a broad education in the liberal arts — and which some of you evidently believe they ought to be doing. I do not.

When I speak of liberal education, I do not refer to job training nor to a set of utilitarian skills such as those which seem to be tested by the so-called COMP exam, nor do I mean the checklist of books and data which Allan Bloom and E.D. Hirsch outline as essential for "cultural literacy." Nor do I mean a unified, regulated body of certain knowledge that represents the fruit of "cultural consensus." I am under no illusion about the profound battle underway in universities about the curricular content of a liberal education. Architectural culture is — and ought to be — contested terrain, rather than just white-male ethnic studies, and to the extent that it has not been, many Voices, many Others, have not been heard. It should be no surprise to anyone that the recent ACSA study on women in architectural education reveals that the profession has a poor record in its openness to Others, to women, but more than that, to other minorities. Most of the operation of the discipline in practice, as well as in the classroom, excludes critiques of class, gender, politics, and ideology from discussions of architecture in favor of the preeminence of form and aesthetic concerns. While I do believe that it is possible to erode such teaching strategies, one of the most important ways of doing so is through engagement with those other issues also in other disciplines.

Given the evidence at hand, I do not believe that the professoriate is able or willing to overturn its longstanding preferences overnight. It would be naive to think that the same profession which has for long been so sexist, racist, and narrow in its focus is going to change very soon through the incremental addition of other Voices into the professoriate. This is necessary, but so is a body of students who have been forged in disciplines where these strategies of dominance have been contested for a much longer period of time. I agree with Dean McMinn that continuing on with our studios as they have been, with the one-on-one tutorials, is a recipe for continuing the profession and its academic version much as they are now. Architecture ideally engages a full range of problems from the political to the psychological, and it participates in the discourses of many other disciplines. But I do not believe we can continue to treat these disciplines as trivial addenda to the grand project of Design. They are instead the necessary foundation for any engagement in the built environment. All of the arguments for making discussions about a wide range of matters an ongoing component of architectural education in the studio are correct — but this requires a basic liberal education foundation at the undergraduate level for such things to happen at the graduate level.

Finally, I oppose the addition of a doctorate in architecture as the first professional degree. From everything I can determine, most of those courses of study are primarily based in other disciplines (urban planning, sociology, computers, etc.) but are directed toward architecture. In my view they

ought to remain in those other disciplines, where the student will receive rigorous training in that discipline, and also engage architecture.

A Ph.D. in design? Whatever would that be? So far I've seen nothing that convinces me that there can be such a thing. One major argument, as I understand it, is that such a degree is necessary in order for architecture to function in the university; or, that to achieve proper respect, the architect should have such a degree. Well, education tried that, and I don't believe it worked — the Ph.D. in education is held in low esteem elsewhere in academia.

No — architectural design is different from these other fields and ought to reaffirm that difference. On the other hand, if everyone could have a Ph.D. just for putting in three or more years of post-baccalaureate education, some of the hierarchies might fade. But not from the others: from the architects. I see far more elitism in architecture — with the exceptions of law and medicine, far more insistence that through architecture and its professoriate one can embrace all of the methodologies and bodies of material in other disciplines — than I hear from other disciplines (one doesn't hear Literature professors claiming to be able to do architecture, as one hears design faculty claiming about literary theory). More seriously, I do not believe that the architectural professoriate ought to be anxious about shoring up its academic stature right now, when there are far more important matters on the table.

I believe that, given our media and image-driven society, we have the unique opportunity in the university to contest seriously all manner of strategies of dominance. To lose that opportunity in favor of professional training, with a light froth of exposure to other disciplines and other voices, is criminal.

"The Liberal Education of Architects"

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Can we be trusted?

One of the many lessons that we might learn from a liberal education is that good intentions sometimes lead to great mischief.

About thirty years ago, a group of architectural educators met at Princeton to discuss how the general education of architects might be broadened. At the end of their deliberations they recommended a curriculum which was much like the one they saw around them at Princeton. This consisted of a four-year liberal arts undergraduate program with a concentration in environmental design, which was to be followed by a two-year professional masters degree program.

The 4+2 formula worked well at Princeton where the undergraduate students arrived well prepared for the liberal arts, and where the university and the undergraduate faculty were experienced in conducting an interdisciplinary undergraduate program. Unfortunately, at universities with more limited or more fragmented liberal arts departments, the undergraduate architectural studios simply expanded to fill the available time. Students in these programs found that they were employable at the end of four years. They entered practice, were promoted, took on adult responsibilities, and saw no practical need to return to the university for a masters degree.

The 4+2 educational experiment coincided in time with some equally experimental new licensing laws which required something called a "first professional degree" as a prerequisite for the architectural examination. In the case of the 4+2 curriculum the "first professional degree" was the Master of Architecture. This combination of events has stranded a number of young people who cannot advance in the profession unless they quit their jobs and mortgage their houses to pay for two more years of tuition.

The educational/licensing complex is a powerful cartel which now totally controls entry into the architectural profession. It is also in a position to make arbitrary decisions about what it provides for its captive market. Ironically, compulsory architectural education is justified in the name of public safety at a time when disciples of Mr. Derrida in the schools are preaching the impossibility of reading all texts, including building codes.

A twentieth-century experiment

Nineteenth-century Americans seem to have become reasonably well educated without much professional help. Louis Sullivan, Frank Lloyd Wright, and even Stanford White, entered our profession as teenagers and did significant work in their early years. In contrast, many of today's graduates have become middle aged and debt ridden while studying for a career about which they have been told very little. I wish we could see some evidence in the quality of the buildings of our era which would justify the effort and sacrifice of these students.

The attempt to educate architects in universities is a twentieth-century experiment. That we are meeting here is an indication that many of us are not satisfied with the results. As educators, however, there is a likelihood that we might prescribe an added dose of credit hours as a cure. Given our proven ability to do damage, restraint seems very much in order.

What is liberal education and what is it good for?

Michael Oakeshott describes liberal learning as a period of independent study in which one's accumulated cultural inheritance is explored to identify the full spectrum of human possibilities. It is not intended to lead a student to any specific conclusion or to make him or her a better or more useful person. The sole purpose of liberal learning is to

make one aware of the full array of opportunities which life offers. Students must prepare for this intellectual walkabout with rigorous primary and secondary schooling which recognizes that reading is inseparable from content and that action is linked to ethics. This kind of early education is harder to find in the United States than is used to be.

My wife and those few friends who have had the advantage of a liberal education seem to be better for the experience. Most of them inherited the money used to finance their education, but a few were the products of an old world culture or sect which valued the written word more than the bottom line. They are intellectually self reliant, have broad interests, and are good company. One of the better arguments for locating architecture schools in universities is the chance of providing well educated spouses for members of the profession.

Throughout history, education has been one of the means by which the middle class has defined itself, but I believe liberal education may also have been designed to limit behavioral excesses in the ruling class. Educators could be expected to prefer a Marcus Aurelius to a Nero, and even today, a bit of philosophic restraint is desirable in statesmen and corporate executives. The authors of our United States Constitution showed the value of liberal learning applied to government, while our epoch illustrates that a system designed by philosophers cannot be sustained by consumers. Our national survival seems to require an educational course correction, but this must begin in preschool and the early grades. Our democratic renaissance cannot be postponed until graduate school.

Have architects ever had a liberal education?

Many of the great buildings of history were designed, detailed, and built by anonymous craftsmen whose social position and formal education were quite modest. Vitruvius' ideal of a humanistic professional education was probably wishful thinking, but it served as propaganda for the upstart classical architects of the Italian Renaissance in their efforts to displace the master mason. Even in the age of humanism, however, there were questions about curriculum. Alberti began as a classical scholar who seems, at least to me, to have developed into a rather clumsy designer, while Palladio, a gifted master mason, studied the humanities in later life. In our more orderly age, Palladio would have trouble with his IDP value units, but he designed some very good buildings anyway.

The absolute monarchs of the seventeenth century were suspicious of genius and of educational programs which encouraged independent thought. They therefore established academies for military officers, artists, poets, and architects which would direct the creativity of these professions into channels which would support the state. The later École des Beaux-Arts was also kept at a safe distance from the vital centers of political thought and power. Only Thomas Jefferson, a democratic revolutionary, united the arts and politics. The land grant universities in which most American architectural schools were located were established for practical utilitarian goals. They were expected to increase the yield of our farms and warheads rather than to foster humanistic introspection.

The system of rewards in both public and private American universities, which places a higher value on specialized research and publication than on teaching, works against liberal education. The institutions may have been organized into departmental structures which were intended to prevent social criticism as Page Smith argues, or they may simply have lost their way in the thicket of philosophy and relativism about which Allan Bloom complains. In any case, the best environment for liberal education in the United States seem to be our small independent colleges, and these have no connection at all with architectural education.

Richardson's atelier

The first forty years of American university-based architectural schools produced very few graduates. Attendance was voluntary, the program differed little from engineering, and there were ample opportunities to learn architecture on the job. Yet

during this time, architectural education in the United States may have reached its zenith in the office of H. H. Richardson. This firm was modeled on the Beaux-Arts atelier. In it a vertically integrated design studio was given the novel advantage of working on real buildings.

The list of architects who were educated in Richardson's office is as impressive as the projects which they designed. Echoes of this enlightened apprentice system survived into our century in the Taliesin Fellowship and in some of the better offices of our eastern and midwestern cities, but in recent years the system has been wiped out by the professional degree requirement.

The classic revival

University education for architects first became a common practice because of the popular enthusiasm for the Beaux-Arts style following the 1893 Chicago World's Fair. The classical orders were in fashion, and except for gifted youngsters like Stanford White, it was felt that the university was the best place to learn to manipulate them. For about forty years the American Beaux-Arts educational program graduated the designers of competent banks, libraries, courthouses, and rail terminals. The philosophic underpinnings for the style were more substantial than the recent theoretical updraft which supported Post Modernism, but it would be an exaggeration to confuse the Beaux-Arts system with a real classical education. One still had to refer to *Graphic Standards* to calculate the Roman numerals for cornerstones.

The Beaux-Arts curriculum survived the modern revolution, at least in outline, but without the classical orders architectural education lost its aesthetic bearings and entered a state of constant flux. Today, the formal academic design vocabulary really results from whim reinforced by tenure.

"Design" is a way of describing the current interests of the more charismatic studio critics. "History and Theory" is the myth which supports "Design." "Technology" concerns the outmoded "Design" of critics who have lost their charisma. "Practice" is a view through a knothole into the alien world of construction. This is, of course, an unfair caricature of what actually goes on in most of our schools, but it is important to remember that the quality of our university programs is based on the good sense of the faculty rather than on any solid discipline.

This good sense is interesting in that it is similar to the civilized restraint one might expect as a result of liberal education. It may indicate an inherent discipline in the study of architecture which is similar to that underlying the liberal arts.

Architecture as a liberal art

Having said all this, I am not sure that an architectural education does not come closer to the goals of liberal learning than any other program available within our troubled universities. It is broadly based, directionless, inconclusive, and totally absorbing. It prepares us for little, other than a life of engaged wonderment. But, it also leaves us with the idea that we are makers rather than victims of history, which is a useful belief in a democracy. Architectural education, at its best, can be thought of as a case study approach to the liberal arts. At the same time, we should not confuse it with vocational education.

At present we seem to recruit most young architects from those downwardly-mobile elements of the upper-middle class who tend to harbor aesthetic sensibilities. This is fine, but the profession would be enriched by the addition of some ambitious and feisty youngsters who see architecture primarily a means of improving the general welfare. It would also be nice to have a few compulsive builders to mix with the talkers and the thinkers.

Work in an architectural office ranges from very easy, manual tasks to involvement with complex personal, technical, and contractual issues. It is possible to enter practice with almost any level of education, and because there is no particular academic or scientific discipline underlying our work,

the education we bring to it can be very unorthodox. After all, in times when change was required, it has been the Brunelleschis, Paxtons, and Bucky Fullers upon whom the profession relied. Schooling is expensive.

New divisions of responsibility

We will have to reorganize our resources if we are to keep the profession open to the full-range talent on which our future vitality and usefulness will depend. Any serious effort to improve architectural education must begin by severing the connection between state licensing and the university. Code compliance is not a college-level subject, and it is bound to have a low priority in any curriculum.

Public safety: The state has a responsibility to examine and certify the competence of persons who apply for and issue building permits and who supervise and inspect construction. This calls for a common technical education in public safety which should be shared by the entire spectrum of engineers, construction managers, developers, code officials, inspectors, designers, and architects who plan, design, and build our environment.

The states themselves are better equipped than a university to design and teach courses in this vital area. They could easily be made available to young people working in the construction industry through the community-college system. State certification in the area of public safety should be a prerequisite to architectural education rather than its ultimate goal.

Technology: Full-time university attendance will remain the easiest way to master the theoretical fundamentals of engineering and building system design, but these subjects should also be offered to apprentices outside working hours. The educational delivery system which did this could also be used to keep the various design professions up-to-date through post-graduate continuing education.

Design and Practice: Architectural offices must once again recognize an obligation to teach in the areas of design and practice. This will require adjustments in the way many offices are managed and financed. The school programs which are now in place will continue to be the principal means of preparing for practice, but night-school programs in design and practice for working apprentices should also be available. There is also a place for a continuing relationship between the schools and offices where the work-in-progress can be viewed from a critical distance. The opportunity to discuss and reflect on one's professional activities is as necessary to practicing architects as pathology is to the practice of medicine.

The Liberal Arts: I hope there will always be a place in our education system for liberal education. This must begin in the primary grades, develop in high school, and continue through an entire lifetime. We might model our programs of both professional and liberal education on that of the performing arts, with their daily regimen of study, teaching, and practice. Education has no value if it is not shared. It must not be misused to enhance a false sense of professional authority. Instead, it must link the professions to the society which they serve.

As an elite, we architects tend to become lonely and prone either to excessive drink or exaggerated rhetoric. We have better things to do.

"An Academical Conversation"

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We persist in talking to ourselves, failing to learn from other fields; but someone recently made the rather startling observation that we were only one hundred generations removed from Homer. If we begin with Ictinus — and have him join other great architects of each subsequent generation — they would not fill this room! But what a conversation we might have about education, training, indoctrination, and the profession —following, of course, a slide show to bring them up to date. Thomas Jefferson is only five chairs away from you and you might be sitting next to Frank Lloyd Wright, who is next to Louis Sullivan.

Our topic is a liberal education, which is a preparation for liberty and a liberation from stasis, cliché, and conventional wisdom. It means to be generously educated, to develop a generous mind and attitude, willing to see anew, think again, hear reasoned argument and enjoy a life of responsibility as well as stimulation and growth.

Our most cherished role model is that lawyer-architect-politician, Thomas Jefferson, whose curiosity, talent, and generosity of mind continue to inform our educational system and our democracy. His design for the "Academical Village" at the University of Virginia is on every list of major works of architecture in America. He was an unlicensed, unaccredited architectural moonlighter, with a number of great houses around Charlottesville. We should also not forget Jefferson the coolly passionate revolutionary, the liberal radical.

Christopher Wren (possibly as a reaction against William and Mary) disliked the enclosed quadrangle as a college plan and suggested it should be open on one side. Jefferson's open-ended site plan was later blocked by that arch-eclectic Stanford White. This stoppage is all too symbolic of the usual response to proposals for change in our field.

The history

In 1904, John Galen Howard, of the University of California at Berkeley, had the temerity to propose that an architect should be educated as well as trained, and that a six-year educational program (three years general and three years professional) was probably a minimum. Howard had sustained a peripatetic and self-integrated education, which indicated to him the need for more than studio training. If an architect were to have insight beyond skill and something to say, as well as the craft to express it, he must have a greater depth of understanding and experience.

In 1900, a few years before Howards's statement, Louis Sullivan addressed a meeting of the Architectural League of America in his own Auditorium Building to tumultuous applause. The League was a Midwest organization in protest of the AIA and its eclectic, reactionary posturing. With his usual eloquence he spoke of the inspiration of nature and the necessity to "look for inspiration in the needs and wants of people." These are unlikely subjects to be learned in an architectural sweatshop.

He went further to say, in a Chicago *Tribune* interview, "It is clearly recognized that educational methods, hitherto, have been criminally false . . . the professors of architecture are brooding, like blight, over their schools . . . they extol the artificial, the unreal. They laud symbols and figments . . . . they repress and pilfer the spontaneity and charm of youth, the sanity, the higher usefulness of the future man." This, after MIT and the École des Beaux-Arts. In spite of his words, it was unfortunate that he was never asked to teach.

During the 1940s and 50s Walter Gropius spoke repeatedly about our need to change our professional practices, involve ourselves in building, become better participants in society, and more the anonymous architect. In 1966, Nathan Pusey, then president of Harvard, gave a notable talk at the AIA convention on "The Needed New Man in Architec-

ture", urging us to broaden our scope and be of greater service and significance than simply a service business doing projects for the self-indulgent wealthy -- private or corporate.

In a 1969 report on architectural education in California, Lawrence B. Anderson, dean of architecture at MIT, remarked on the efforts the profession had made to improve its performance through restrictive regulatory mechanisms of accreditation and licensing. They have had the effect of lengthening the educational process, increasing its expense, and wasting students through high drop-out rates. A student was on an educational track with almost no cross connections to any other outcomes, and it was edged with failure and discouragement. The student had to survive at least ten years of schooling and apprenticeship to be licensed. This is still true today, though it is now more like twelve or fourteen years since undergraduate students are averaging six years to graduate. It would be churlish to mention 80% first-time failure rates on the design examination for licensure. Robert Gutman's finding of high levels of alienation within the young professional group is hardly surprising. The gate-keeping and begrudged welcome of novitiates must cease. If we abuse the next generation, it will abuse the following one.

In the 1974 November issue of the *AIA Journal*, I made a plea to open our vision of the profession, see the opportunities for service, and have a greater impact. In response to enrollment demands, it was a modest proposal to expand the number of schools, increase the number of graduates, and provide the market with better educated skilled architects who would develop new arenas for professional service and take their place in a broader design community. There are opportunities in construction, real estate, development, business, finance, government, and education that architects can fill better than anyone else.

Derek Bok, president of Harvard, in an article on education for the law, "A Flawed System" -- which applies equally to architecture— and in his latest book, *Universities and the Future of America*, has been an eloquent critic who needs to be read and heeded.

I have cited all of these because we have had almost one hundred years of recorded cries and raging in the wilderness. The latest is Dean Robert Beckley of Michigan. He finds the profession to be socially, economically, and politically uncredible. He believes schools will not be given greater legitimacy within their institutions until the profession demonstrates a greater value to humanity.

A new direction

Since the 1950s, planning schools, law schools, and business schools have found their best graduate students coming from a wide variety of undergraduate majors, not from their own undergraduate programs. It is just as true for architecture. The difference in the level of student commitment, maturity, and competence is soon apparent, but the true benefit is a student group bringing to the school a rich mix of interests and experiences. Having that richness, the basic architecture program could be honed to its essence as an intense concentration. This could then later be capped with specializations and other degrees in business, law, engineering, or education. Schools must provide the environment for the growth and legitimacy of roles other than that of just the building designer. Interaction with other fields enhances our regard on campus and enlarges our ability to contribute.

In 1967, Berkeley moved to the M. Arch. as the only professional degree. Utah changed to an M. Arch. in 1969, but with the provision that the undergraduate degree be in some other field. Since a certain overlap occurred, it was billed as a 3 + 3 program. Washington University in St. Louis had something parallel, with the M. Arch. being the professional degree. Appalling as it may seem twenty years later, only one-third of all accredited schools have moved to the M. Arch. as the appropriate program. However, it is a distinguished group, including Harvard, Yale, Pennsylvania, Princeton, Berkeley, Michigan, M.I.T., Illinois,

Columbia, and UCLA. Why has it taken so long? Change in our field seems to occur at a glacial velocity.

The objectors

I mentioned earlier the barrier-raising response to any educational initiative. It came from some apoplectic practitioners, some nay-saying teachers, and from NAAB and NCARB. NAAB seemed to denigrate the new M. Arch. as just a first professional degree and that two professional degrees were clearly better than one. That this could mean being twice as educationally deprived did not seem to register. The most egregiously reactionary move was that of one school's alumni and local architects who literally forced the school, being private and highly dependent, to revert to the B. Arch. as the good and true and only conceivable program. We need to be freed of such closed thinking. Schools cannot become just creatures of the corporate profession. Law and medical schools are far less subject to coercion by the American Bar Association or American Medical Association.

Architecture cannot justify its position in any university if it remains the last of the five-year undergraduate trade schools on campus, with 60 to 70% mortality rates. Pharmacy is the next to last, and that is in the process of change. The evidence is all about us, both in brick and in print, that architecture and education for it is professionally naive and academically provincial.

Accreditation, licensure, and tenure

Lawrence Anderson, in an extensive response to Walter Wagner's *Architectural Record* editorial of June 1978, disputes Wagner's reactionary views and speaks of the necessary withering away of accreditation and licensure as having outlived their usefulness. This response, by one of the seminal thinkers of architectural education, went unpublished.

Conformance and *compliance* are the two operative words in NAAB performance specifications. Preparation of a response is a truly brain-deadening exercise. The inflation of stultifying bureaucracy and oppression of restrictive regulation is now intolerable. Tenure has also outlived its purpose, and its meaning is distorted. The process of obtaining it, justifying it, and defending it consumes time and energy better spent. When faculty members finally realize that tenure is being used to keep salaries depressed, another method of guaranteeing freedom from intellectual and political harassment will be found. While administrative complication has occurred in every field, it is without resultant benefit. Neither the NCARB nor NAAB could withstand a value- engineering analysis and certainly not a class action suit for restraint of trade.

If relevancy and credibility are our failures, new programs must go beyond simple elevation of traditional, NAAB-approved curricula composed of design, structures, mechanical controls, history, and ethical practice. The generic architect produced will be obsolete on graduation. This issue has not been sufficiently addressed and could well occupy us for another twenty years. The range of possible contributions in the "new profession" can take the architect out of his client dependency, or agency role, aid the profession in escape from its self-constructed trap, and allow us to achieve positions of greater influence. Schools must encourage postgraduate development in areas of concentration and specialization, which supplement a common core. Simple expansion of the technical curriculum misses the point. Interconnections with relevant disciplines must be expanded, with the integration of these subjects left to good student minds.

What should be emerging educationally is a career-long program of liberal undergraduate education in any field with some pre-professional courses, professional studies as graduate work, internships (not indentured servitude), and formal postgraduate studies in specific areas as one's interests or opportunities change.

The undergraduate

Related to the elevation, or levitation, of stock programs to graduate status is the multiplication of pre-professional and non-professional undergraduate degrees within the schools. Some critics have unkindly characterized them as unprofessional. We have had a history of B.A.s, B.F.A.s, B.E.Ds, B.A.D.s, B.A.S.s, Arch. Engineers majoring in architecture, with graduates being second-class citizens and programs used as dumping grounds for those weak in design. They are sometimes billed as express tracks to "get out faster" — presumably to be involved in fast building, quickly ingested by a fast-track world. These do represent questionable pedagogy and professionalism. Deliberate creation of complexity and contradiction in programs is perverse and unworthy of architects. We should be seeking clarity and uniqueness, structuring our world elegantly and openly.

Law, business, medicine, and engineering are not busily creating paraprofessionals, nor should we be. If we do, they will be just in time for their computer-aided-disemployment (a new form of CAD) certain to follow the present recession ,which already has scores of architects on the streets. Future firms will be technologically advanced and employee lean. Our expensive, hand-crafted, labor-intensive history is ending. While we may conserve or increase our student credit hours, expansion of such secondary programs, even billed as liberal education within the shell of our schools, only continues our provincialism in thinking we can best do it all. Participation in and appreciation of other disciplines is our only route to reciprocal understanding, value, and credibility. At the same time, that does not mean we need to be subject to those other disciplines who would presume to save us from ourselves.

Our strengths

Architecture has much to offer within a community of learning through its design method, similar to case studies in the other professions, and in its tutorial-like instruction. We are all familiar with the dedication engendered by a design problem demanding all of one's understanding to reach a creative solution. The example of architectural students' commitment and focus astounds most other students and would be a welcome infusion to the atmosphere of any campus. Equally, serious complaints of most university students are their anonymity and their isolation from senior faculty. Here again the architectural critique could serve as a useful teaching example, having a wider application for an individually enhanced learning. Also, both introductory and appropriate upper-level courses in architecture should be open and inviting to other students. Here is the area to increase student credit hours.

The research route

Without graduate programs, the research route to legitimacy, rewards, prestige, and social value is closed to us. Since the 1940s the overhead dollars are those on which our purported great research universities have fed and grown. Beginning with private institutions such as MIT, Harvard, Chicago, Cal Tech, government purchase of research products moved into land grant universities, and now permeates all but the smallest schools. Excesses and abuses were bound to occur, the most serious being devaluation of teaching. It should be worth noting that the contributions of the other professional schools are not all that exemplary. Law and medicine, as the most highly paid (and therefore most valued) professions, have been especially active in institutional administration ,but have contributed little to the teaching and learning missions or to pressing social questions.

It is interesting that the relevancy and contributions of entire universities, not just the professional schools, are being called into question. According to Derek Bok, some questions that must be addressed are competitiveness, poverty, public education, and environmental hazards. We might also add energy, housing for young and old, transportation, work and learning environments, land use, finance, and management. We should also add ethics, particularly for the last two.

Until there is political change and a reordering of the social agenda, it is unlikely that research funding and its rewards will come to architecture. But by collaborating with the health sciences, basic science, and engineering and showing the imagination and ordering skills we have to offer , there is opportunity even if close behind the research dollars are the accountants and vastly expanded administrative demands. Fifty percent of all research dollars go to the health sciences, forty percent to basic science and engineering, and ten percent to all others. Architecture is near the bottom of all others. Being aware of the excesses and the devaluation, we should be able to give proper priority to teaching while those best suited give their priority to research.

The future

It may be that coming of age at the turn of the last century, when self-interest, monopoly, restraint of trade, and a social elite were the game, our profession has never understood the potential of its role. Myths persist, but the myth of the architect as the great generalist, grand orchestrator, comprehensivist is in radical conflict with the often-heard opinion that only those "doing" buildings should be allowed to call themselves "architect". It is time to rid ourselves of the limited definition of an architect, the constricted concept of architecture, and the destructive process of becoming a practitioner of that art. Jefferson would be disappointed in the profession for the art that he loved. Any oppressive system is ultimately self-destructive. It collapses of its own weight or from judiciously placed charges — imploding, not with a bang but a sniffle.

Anyone for reopening the south end of Jefferson's great "lawn"?

"Points of Discussion: A Summary of the Open Discussions of the Symposium"

> *"I hold it, that a little rebellion, now and then, is a good thing, and as necessary in the political world as storms in the physical."*

Thomas Jefferson, January 30, 1787, in a letter to James Madison.

In the first century B. C. Marcos Vitruvius Pollio, in his *Ten Books on Architecture*, asserted that "the architect should be equipped with knowledge of many branches of study and varied kinds of learning," because "the function of an architect requires a training in all the departments of learning:" drawing, geometry, arithmetic, history, philosophy, physics, music, health, law, philology, and astronomy. He entreated Augustus Caesar to open all books on these topics for architects to study. Vitruvius based his philosophy of architectural education on the commentaries of the Greek architect Pythios, the architect of the mausoleum of Halicarnassos (B. C. 353) which was one of the seven wonders of the world, as well as the Temple of Athena Polias at Priene (B.C. 320). Pythios believed that an architect should be accomplished in all the arts and sciences. Twenty centuries later Thomas Jefferson, by far the architect most frequently referred to in the symposium, was perhaps the most liberally education person of his time. The basis of Jefferson's education was not significantly different from the basis Vitruvius or Pythios before him recommended. Jefferson, also an educational theorist of historic importance, believed that "the best in genius and disposition" should be taught English grammar, Latin, Greek, mathematics, geography, and Greek, Roman, English, and American history before they considered going off to William and Mary or later to Jefferson's own University of Virginia. Two centuries after Jefferson's death and with a base of knowledge neither Pythios nor Vitruvius but perhaps Jefferson could have fathomed, participants in the Graham Foundation Symposium in Kansas still insisted that the architect of the 21st-century would have to be liberally educated to practice effectively.

A liberal education, however it may be defined, is so firmly rooted in the tradition of architectural education that no one could deny its position as the foundation of all architectural study. Yet in spite of this agreement about tradition, few of the participants in the Kansas symposium believed that architecture students receive a liberal education through either the five-year undergraduate degree in architecture or its extension, the 4-plus-2 degree, which together comprise most of the professional degrees awarded by schools of architecture in the United State today. The core characteristic of these degrees is the design studio, which none of the five main speakers—Professor Stephen Grabow, Dean William McMinn, Professor Diane Ghirardo, Mr. John Hartray or Professor Robert Bliss—considered liberal in its content, system of delivery, or intent. Indeed, the design studio has basically overwhelmed everything else in these professional degrees and has pushed the liberal arts into the background. Stephen Grabow said, "in my case I came to it [liberal education] through architecture first, but I am unsure if that scenario works today. I have the sense that this tradition is not effectively being transmitted today..." Diane Ghirardo noted that both in terms of the number of units assigned and the attitude of the faculty, only design studios in architectural education count, not courses in the liberal arts.

However, Jack Hartray believes that design studios count for little because "architectural education today has nothing to do with practice." He emphasized this several times. Hartray believes that design in the schools today merely "reflects the current interests of the most charismatic critics and the most exciting talkers on the faculty. Design can mean absolutely nothing. It is whim reinforced by tenure." To overcome not only the lack of liberal learning in architectural education today but also the irrelevance of the professional curriculum to the profession, Mr. Hartray recommended that licensure be severed completely from academic

architectural education and that there be no more accredited degrees. He claimed that "architectural education in the United States may have reached its zenith in the office of H. H. Richardson" which was "an enlightened apprentice system" that "survived into our century in the Taliesin Fellowship..." In Hartray's opinion , this is the kind of professional education architecture should go back to because it related directly to making buildings and was not merely talk.

Although they had different reasons for coming to this same conclusion, all of the speakers (the academics) agreed with Hartray (the practitioner) that the accreditation process had overwhelmed the educational process to the deteriment of the profession and the universities. In the discussion on Friday afternoon, Hartray's proposal to "revolt" against the current system of architectural education was taken up again, but even more adamantly this time by Robert Bliss of Utah and Diane Ghirardo. While about half of participants, such as Bill McMinn from New York and Marvin Malecha from California, believed the regulatory issue was beside the point in a symposium about liberal education, about half insisted that the regulatory agencies represented the main obstacle to reform. A small number wanted to keep these regulatory agencies operating to prevent the uncoupling of professional controls on university education. However, most symposium participants agreed that NAAB's 71 criteria for accreditation were far too extensive, prescriptive, and arbitrary for any single professional architecture degree to accomplish. Further, most participants believed that the accreditation criteria were so weighted toward professional skills that they effectively precluded an adequate understanding of the liberal arts and sciences at the undergraduate level. Marvin Malecha agreed to discuss these concerns about NCARB and NAAB at the ACSA Administrator's Conference in Tempe and in later meetings with the five presidents' committee.

Thus, the symposium answered one of the five questions Bill McMinn raised in his keynote address. He asked: "Will accreditation boards and licensing boards assist the schools of architecture and encourage, even insist on, innovation and experimentation towards a new vision of architectural education as it prepares for a new century?" Symposium participants answered probably not. This "probably not" expressed the symposium's basic psychology, a kind of skeptical patina that cast doubts about American higher education in general and architectural education in particular. Indeed, the symposium recognized that American higher education was in crisis, just as Page Smith in his recent book, *Killing the Spirit*, maintained. The symposium concluded that architectural education was not alone in its dilemmas and that it was time for change.

Besides this one controversial issue, there lay substantial questions and profound discussions about liberal education and its condition in architectural education. These discussions were fired by five main questions which the symposium papers addressed, and the five speakers and the approximately 60 participants argued about passionately and often eloquently:

1. **What is liberal education**? "Does the present form of architectural education develop the ability to adapt and accept change as inherent in the future of the practice of architecture?"

2. **Can the architectural design studio be liberal?** "Does this limited arena of the studio create a mind set and attitudes that become part of the life of the architect to the detriment of the ability to relate to society and its processes?"

3. **Can schools of architecture be liberal?** "Can or should architecture become part of the liberal education for students of the university?"

4. **Should schools of architecture offer liberal degrees?** "Will architectural education become an academic field of studies, as urban studies or environmental studies, to be followed by rigorous internships in quasi-educational/practice settings outside the university?"

5. **What kinds of professional degrees should schools of architecture offer?** "Should there be a B.A., B. S., B.E.D., B. Arch., M.Arch., D.Arch. and Ph.D. in architecture? Should more than one professional degree exist in architectural education? Should the D.Arch be the first professional degree?"

What is liberal education?

This first issue always creates a long discussion, and the symposium speakers, participants, and papers offered a rich mixture of definitions. One point of agreement seems very important. The symposium suggested that liberal education takes a long time and indeed must be seen as an organic process that unfolds over the course of a lifetime. Not unlike John Dewey's idea of educational growth, the symposium concludes that liberal education is continuous, that its inherent characteristic is learning to love learning, that no amount of time or formal education can or should sum up liberal education and that consistent, continuing education in some form or another is essential to a liberal education. This organic philosophy of lifelong education deeply embodies the idea of growth in its future orientation. One of the universal experiences of the late 20th-century is the speed of change, the explosion of knowledge, and the need to be adaptable. This was frequently mentioned, and Bill McMinn began his keynote address when he asked "whether the present form of architectural education can develop the ability to adapt and accept change as inherent in the future of the practice of architecture?"

Cecil Steward, from Nebraska and President-elect of the AIA, answered in his paper that the present form of architectural education is myopic at best and in need of structural change. "If we could begin to view the years of 'professional', or university education as structurally connected, both at the beginning—to primary and secondary education—and later in life—to professional internship and professional development education—then certain economies of time, focus, and the ultimate outcomes could be realized for the students, the accredited institutions, and ultimately, the profession." By this Steward suggests that architectural education does not begin and end at the university and that not everything should or can be done at any point in the life-long educational continuum. Each component of the structure of architectural education does some things better than others but all the components must fit together.

The love of learning, one of the functions of the liberal arts, is a powerful mechanism to make these educational components fit. It is the glue that connects primary education with secondary education with university education with professional education. Love of learning produces what Bob Bliss called "a certain generosity of the mind" which allows one "to think again, to liberate oneself from conventional wisdom and to see anew." Generosity of mind is a traditional goal of the liberal arts, a freedom A. Bartlett Giamatti described as a "mind unfettered" which represents a dimension "that will outlast a profession, that will represent by the end of your time on earth the sum of your human significance." This generosity also has obvious pragmatic applications according to Giamatti. "There can be no more practical education, in my opinion, than one that launches you on the course of fulfilling your human capacities to reason and to imagine freely and that hones your abilities to express the results of your thinking in speech and in writing with logic, clarity, and grace. Fear not, you will not be impeded from making a living because you have learned to think for yourself and because you take pleasure in the operation of the mind and in the pursuit of new ideas."

If architectural education, whatever form it takes, could instill the loving-to-learn attitude in all students and emphasize the continuity of learning, many educational problems—liberal or otherwise—would resolve themselves over the course of a lifetime. But even where there is agreement, the problem of implementing curricular ideas about liberal education at the university level, which came up again and again, is formidable. The perfect curriculum driven by a perfect educational philosophy of continuing education might not be

deliverable because of faculty limitations. In many schools of architecture there is often a big discrepancy between the curriculum in the catalog and what the faculty teach. As Diane Ghirardo said, "even if these liberal studies are incorporated into architectural curricula, who is to teach them?" There are also student limitations. For example, we recently saw a bumper sticker in Lawrence which said: "They can make me go to college but they can't make me think." The symposium did not disagree about these limitations.

Besides the universal belief that liberal education cannot be "gotten out of the way" so that more important matters can be entertained, participants in the symposium forwarded three definitions of liberal education:

- the progressive definition,
- the radical definition, and
- the modernist definition.

Although no consensus was reached on these definitions, we estimate that most of the symposium participants could be called progressives. They define liberal education additively, like 20th-century Vitruviuses, with a list of things to know or capacities to develop. For example, Wayne Drummond, Chairperson of the national AIA Committee on Education gives this definition:

> It should be apparent that the foundation of the educational experience required is a comprehensive general education including an awareness of the values and attitudes of past and present cultures; an understanding of the standards and expectations that guide human behavior; an understanding of the concepts and principles which govern the phenomenon of everyday life, including the natural, artistic, technological, and social world in which we live, work, and play; an ability to identify, evaluate, and act on issues in a rational, logical, and coherent manner; and finally a competence to effectively convey this awareness and understanding through writing, drawing, speaking, and listening in an accurate and honest fashion.

Liberal education of this type is a tall order, but as Arthur Stamps noted, "the hallmark of a liberal education appears to be breadth of comprehension." It is obvious that these extensive goals would take a long time for anyone to achieve, and a liberal arts degree from the best undergraduate college probably means only a beginning level of achievement. But according to the research of Jon Coddington from Tennessee, a liberal arts degree may not assure an adequate beginning. In fact, a degree in architecture at the University of Tennessee seems to be a superior mode of transmitting a liberal education defined additively in terms of "communicating, solving problems, clarifying values, functioning with social institutions, using science and technology, and using the arts." Coddington's paper drew considerable comment and questions from the participants. Many of these questions had to do with what exactly was being measured statistically at Tennessee. Are his indices, when added together, the measure of a liberally educated person? If so, architectural education at Tennessee would appear to be a model, if not an ideal form of liberal education.

However, a "progressive" definition of liberal education, no matter what it strings together or how it adds up the pieces, did not satisfy a significant minority of symposium participants who represent a growing number of architectural educators. To reduce liberal education to any list seems to be a true oxymoron. Linda Groat of Michigan said that "recent debates about higher education (as manifested in best-selling books by Bloom and Hirsch) have tended to advocate simplistic and/or reductionist standards by which to measure the quality of liberal education in our universities. The notion of a checklist of cultural literacy presumes that a discrete and specific body of material can be represented as the received wisdom of our culture." The "radicals" refuse the progressive list because it is also associated with a canon of traditional writers,

a canon which is under fire because it has traditionally left out so much. Diane Ghirardo called the canon "just white-male ethnic studies." It is "narrow, sexist, and racist," and no one in the symposium tried to refute this accusation. (It would not have been "politically correct.") For Groat, Ghirardo, and a growing number of others, liberal education cannot be defined by building a consensus or outlining a core or making lists. Clouten and Jetter maintain such progressive definitions are usually either/or propositions and frequently do not reflect, among other things, the "simultaneous existence of conflicting realities." How can we teach students to consider realities other than their own?

Groat says the role of liberal education is to foster culture. Michael Oakeshott, who was mentioned several times in the debate, defines culture "as a variety of distinct languages of understanding." For the radicals, liberal education must therefore fundamentally be tied to the development of literacy, a facility in many languages. Culture has many voices, not just one main voice, with which a liberal education teaches us to recognize and to converse. Groat specifically defines liberal education as "learning the art of 'conversation' which entails learning about both the *substance* and the *manner* of such discourse." She claims that "ultimately it is the process of such conversation which gives shape to our public life." For Ghirardo, liberal education fosters a "critical, integrative activity," a kind of contestorial conversation that again requires a strong facility in language. Herbert Gottfried, in a statement he wrote after the symposium entitled "The Liberal Education of Architects: A Reflection," defines the process of liberal education as discourse leading to an existential moment "in which the locus of authority for the reading of the text falls heavily on the individual. That is the moment when each of us is required to construct an argument or a personal definition of truth."

A small number of symposium participants maintained an all-encompassing definition of liberal education, a view that is distinctly "modern." To Gerald McSheffrey from Arizona, there is no distinction between liberal education and professional education, and this view is founded on a utilitarian philosophy. Alfred North Whitehead's definition of education as "the acquisition of the art of the utilisation of knowledge" suggests that learning how to use knowledge rather than how to converse in many voices is a liberal education. John Dewey insists that thinking and doing must be connected if education is to work. Based on these philosophies and others, the modernists maintain that architectural education and especially the design studio is liberal by its very nature. McSheffrey believes that "the requirement of a liberal arts degree before studying architecture is not necessary since the subject matter of architecture is not specialized." Phyllis Fast asks a series of modernist questions: "Isn't the process of blending art and engineering a part of liberal education? Isn't being on a college campus for five years a part of liberal education? Isn't working with a variety of clients and building designs a part of liberal education?" The modernists also emphasize again and again that there is no ideal, single model of liberal education. All education, if useful, can be liberal and any subject can be taught "illiberally". McSheffrey quotes Ralph Barton Perry who said that "what is called 'pedantry' was invented in those studies which are classified as liberal." The modernist, all-encompassing definition of liberal education has satisfied many architectural educators for at least 75 years and is the foundation upon which most current versions of undergraduate architectural education are built. However, most participants in the symposium rejected this modernist notion and held either to the progressive view, the radical view, or some balance between these two.

Can the architectural design studio be liberal?

This leads to the second question—can the architectural design studio be liberal? For many the answer was "maybe", but this group freely admitted that design studios, as currently taught, were not liberal. For others the answer was loudly "no". For a few modernists, the answer was definitely "yes" but they remained silent and did not attempt

to refute the arguments of the majority.

Herbert Gottfried says that studio fails to be liberal because architects have not "grounded" themselves, and have neither a common basis for sharing knowledge nor a common means of inquiry, both of which are essential to the liberal arts. Gottfried argues that liberal learning induces existential moments of truth that are lonely, like the loneliness of a shortstop who alone stands between an out and a base hit. Studios produce few of these lonely moments of truth. Instead, the studio is a group activity that fails to raise the design critique to the level of discourse or conversation, the essential means of liberal education. The studio creates a peer experience but limits the moments of truth to lines on paper and a design argument.

These arguments are labor intensive rather than intellectual activities according to Ralph Johnson from Montana, who maintained that an important difference between the studio and a liberal education experience has to do with educational goals. Studio goals relate to acquisition and authority. The studio attempts to make the student think like an architect, and this thinking is expressed in conventional architectural terms. In contrast, a liberal education attempts to liberate the student from conventional wisdom. Hartray said that this liberation cannot take place in the studio where students have to bend to the critic's will rather than think for themselves. Jim Mayo from Kansas explained this problem by saying that studios focus on instrumental action rather than "critical" action. Ghirardo suggested that studio courses are about what's on the students' drafting surfaces rather than on developing a critical awareness that creates different ways for the student to deal with reality. Arthur Stamps pointed out "Robert Hershberger's study of the effects of architectural training on judgments of goodness, pleasantness, and such," and the "findings would tend to suggest that design training might tend to block the ability to comprehend multiple world views."

Malcolm Quantrill, from Texas A & M, remarked in the symposium that architectural education, as currently conceived, is not prepared to evoke or convoke multiple world views because it is undisciplined. In his paper, "The Disciplined Imagination: A Case for the Emancipation of Architectural Education," Quantrill suggests that the progressive approach to liberal education is not the answer either. Instead, Quantrill advocates a redefinition of "the entire scope and structure of architectural education" so that it becomes "a field of free exploration." Architecture will have to develop its "own language of inquiry", the function of which is to "promote a disciplined imagination. The structuring of this language should be the central purpose of architectural education." Quantrill maintains that this language can be created in the design studio if it becomes an emancipatory place, more like a "seminar/arena" where terms of reference may be drawn together into "a comprehensive range of trans-disciplinary references." The current structure of the design studio "is essentially undisciplined" in this regard but "the seminar/arena will have the advantage of freeing students from the vestigial conflict between desgin and other disciplines."

Bill Miller from Kansas State believed that the studio is no longer "reflective" because it is too intense and too many other courses are required to insure the integration of much knowledge acquired outside the studio, either from other architecture courses or courses in the university. Michael Underhill from Arizona State agreed that there were too many professional courses in accredited, undergraduate degrees in architecture. He suggested that university faculties should "prescribe to the NAAB what things could be relaxed to give time for liberal arts courses." As it is now taught, the number of design studios required at the undergraduate level could be relaxed to create a generosity of mind, if the Steward structure of architectural education were operating, so these deeper moments could come along over a longer period of time. Although Jack Hartray believed that design studios are as unrelated to the profession as they are to the university, most participants felt that design studios have much more to do with making buildings than developing values or learning to partici-

pate in the discourse of the university.

This line of thinking leads to a larger question: does the intensity of the studio effectively isolate the students, the faculty and therefore the schools in the university setting? The answer is clearly yes in both university and college settings. In an ironic reply from Bruce Moore of the Hammond School of Architecture at Drury College, a small liberal arts college, we get a sense of this isolation. "If you go out into the liberal arts college, the faculty don't accept you; therefore, you have to bring the liberal arts into the studio."

Can schools of architecture be liberal?

On this question of isolation everyone seemed to agree that architecture was being sold short by not offering courses to students who are in other departments. Steve Grabow shows convincingly that architecture is related to many disciplines and has many concerns. Bob Bliss believes that students from other disciplines ought to have opportunities to take advanced as well as beginning courses in the built environment. Bill McMinn mentioned Vincent Scully's famous history courses at Yale as examples of how effectively architecture can be presented to university students. Robert Vickery's paper, "The Architectural Education of the Liberal Arts Student," convincingly shows that "an understanding of what architecture is, why it is needed, and how it comes to be, is critical for any student interested in being properly educated." Vickery teaches an award-winning course at the University of Virginia designed for the general student. Ellen Dunham-Jones argued and a number of others agreed that courses in the theory of architecture—where the significance of form is discussed—is the kind of course students from other disciplines should take. Finally, everyone understood that the quality of architecture in general will only continue to deteriorate until architects have the chance to work with well-informed clients who value and understand the importance of the built environment. The longer we exclude the general student and continue to run schools in which architects are talking to architects with little critical outside influence, the less significant architecture will become in the larger society. Architecture schools must build a design culture in the United States as well as teach students how to build buildings. The schools and faculty have not taken this responsibility seriously, much to the deteriment of architecture.

Should schools of architecture offer liberal degrees?

The consensus of the symposium was that most architecture degrees are not liberal but there was no consensus that architecture schools should create "academic" fields of study at the undergraduate level. The biggest problem is, in Diane Ghirardo's opinion, who would we get to teach this kind of study? Ghirardo, Wayne Attoe from Louisiana and others do not believe that most architecture faculties are liberally educated, and, therefore, they cannot teach what they do not know. For example, there was criticism of architecture faculty who use other disciplines, such as literature and literary criticism, to study architecture, although these faculty have never studied literature formally. Explaining architecture through Derrida or structural linguistics or phenomenology with only a superficial understanding of these subjects has led to much confusion.

The University of Kansas has forged a compromise by creating a Bachelor of Arts degree in Architectural Studies (see the introduction to this volume) in which students take most of their courses outside the school—about 75%—and take only architecture courses to complete the major in the school. In this way architecture as an undergraduate discipline is not different from chemistry, sociology, or mathematics. They have the same general requirements but differ in focus. This kind of degree allows the student to study architecture without committing to the profession of architecture. With this degree a student could easily continue graduate studies in law, medicine, environmental studies, architecture, business or take up any number of professions. At Kansas the faculty believes that this kind of degree builds the proper liberal arts

foundation for later professional studies in architecture and that this foundation is necessary.

What kinds of professional degrees should schools of architecture offer?

While a few participants argued for a diversity of degees—Dunham-Jones of Virginia, Miller of Kansas State and McSheffrey of Arizona State among others—the symposium worried about the confusing, rag-tag system in which a professional degree in architecture might be a bachelor's, master's or even a doctoral degree. Why give a doctoral degree at one school when almost exactly the same course of study is being offered at the bachelor's level at another school? In order to clear up all the confusion, why not agree on one professional degree, probably at the master's level, and encourage educational diversity to occur naturally within a single, understandable degree structure? Isn't it true that different faculty coming together in different places with different traditions will face different teaching possibilities and will adopt different teaching strategies to address the same content of a professional degree? Won't there always be at least as many different ways to implement a curriculum as there are schools of architecture? Also, wouldn't students with bachelor's degrees bring more intellectual diversity than high school graduates into the complex arena of professional architectural education? Why not take advantage of their maturity?

Some symposium participants pointed to the obvious disadvantages of the professional master's degree. It adds one to two years of formal college education at a significant cost to the student. Phyllis Fast questioned the worth of additional years of formal education in her paper. Anthony Johns of Maryland believed in the importance of a liberal education, but he was "not for adding years to get it" because "it is already on paper" in the accredited bachelor of architecture degree. Johns believed that implementation is the problem, not the degree. More years won't necessarily help. Johns also indicated in his paper and in the symposium sessions that there are other ways of creating a generosity of mind and a love of learning. These ways include work experience, travel, internships, and continuing education. The symposium accepted the validity of these concerns but they were not decisive or convincing enough to sway many from the belief that the professional degree should be exclusively at the master's level.

There was also a strong consensus in the symposium that a doctorate of architecture should not be the first professional degree. Law schools were criticized for simply renaming their bachelor's degrees doctoral degrees without changing the content. Attempts to "professionalize" a doctoral degree through NAAB accreditation, as law schools did through their accreditation association, would reduce the credibility of doctoral education in architecture because professional doctorates would not give students the intellectual tools to pursue serious research.

Doctoral degrees should be advanced, research degrees, and the Ph.D. is the most preferable because of academic tradition and public understanding. After years of experience, the University of Michigan is replacing the Doctor of Architecture with the Ph.D. Engineering schools, also after years of experience, are moving away from the Doctor of Engineering in favor of the Ph.D. which by tradition teaches students to pursue research agendas which create new knowledge. This is the first requirement. Finding applications for this knowledge or solving specific pragmatic problems professionals face are legitimate goals of the Ph.D., as long as the first requirement of the Ph.D. is met.

Some symposium participants argued that no Ph.D. should be given in architecture, except in architectural history which has a long research tradition and a well recognized body of knowledge. In the view of these participants, other aspects of architectural study do not possess either a research tradition or a recognized body of knowledge. Most architectural faculty interested in doctoral education should therefore take Ph.D.s in areas related to architecture that have recognized bodies of knowledge. They would create research agendas in the

affinities between architecture and these other areas. There was no consensus on these ideas.

Stephen Grabow in "Sailboats and Sonatas" discusses the "inseparable" affinities and "isomorphic correspondences" between architecture and the liberal arts and sciences, and his presentation was very convincing on this subject. Yet in spite of a seemingly infinite number of the relationships, the liberal arts and sciences in architectural education seem to have been lost in the ferocious pace of the architecture student's academic life in the United States. When all the 71 NAAB criteria must be jammed into a single academic degree, the liberal arts can be taken for granted because it is easier to measure dozens of professional skills than a generosity of mind and a love of learning. Has there ever been even one school that failed to fulfill at least one of the liberal arts requirements in the accreditation process? Given the enormous tasks accreditors have to assume and finish in the extremely short period of time allotted the accreditation process, it is unlikely that any NAAB team will spend much energy trying to evaluate the liberal education of the architect.

If architects are to be liberally educated—no matter how that is defined—the universities will have to take the initial responsibility for liberal education much more seriously. The schools of architecture will have to stop talking and take action. It is easy to blame the NAAB and the NCARB for our educational troubles. It seems to be much more difficult for the schools to recognize, even in the face of tremendous evidence, that "the dogmas of the quiet past are inadequate." In a letter we received from Bill McMinn a few weeks after the symposium, McMinn insisted that the answers to our problems do not rest with the accreditation agencies. He quoted Shakespeare's *Julius Caesar* in his call for change: "The fault, dear Brutus, is not in our stars, but in ourselves."

"A Liberal Education for Architects"

Robert B. Allen
Professor of Architecture
Washington State University

There are two common views of the architect. One sees the architect as a specialist, a technical person within a field, a person who solves specifically identified problems involving the built environment and produces a solution when there is conflict between competing needs. This view looks at buildings as a complex commodity. The other, a more holistic viewpoint, feels the architect should not only attempt to address the immediate needs of the client, but those of the society in which the problem is based.

Architecture as a commodity, with a rather specific way of viewing the end result as a functioning product, would seem to require an educational system which is specifically task-oriented. It would argue that we only need to identify the problems to be solved for the client, understand the current problems to be solved for the client, understand the current rules, regulations, calculations, products, and available techniques, wrap the results in an acceptable architectural style and facade, and an appropriate solution would result. In this view, good architecture is an automatic end result of good particle planning. If one takes this path, the liberal arts aspect of education for the architect has limited value. This viewpoint would argue that each class which does not cover a specific aspect of the building profession would take valuable time away from the "real" world of architecture.

This architecture-as-a-commodity concept does not reject the idea of a liberal education for architects, as much as it is committed to a pedagogy which argues that the student must have professional courses in so many fields that there is no time available for those general courses which are the hallmark of a more liberal approach to education. In fact, adherents to this viewpoint would argue that by having the students exposed to a large number of different building-specific courses they have a liberal education, by definition. The weakness in this viewpoint and educational method is that the students never really do see the larger picture of architecture as they are too busy concentrating on the individual fit of each specific piece of the puzzle. The end result of this type of education is a professional who is competent, and often quite successful from the financial standpoint, but who does not produce architecture that can inspire and enrich the life of individuals and society as a whole.

A general education, as in the traditional liberal arts manner, gives a student a better understanding of the nature of society in which buildings are constructed. With that background the development of questions to the client, and of society as a whole, can be more broadly framed. These must include issues of not only bricks and mortar but the place of the building in the society contextually, emotionally, and symbolically. The underpining of enduring, excellent architecture has always been, and continues to be, a response to needs and aspirations which satisfy the client and society while providing other elements which are not immediately recognized by the participants or may even lie beyond their direct conscious understanding. A first class building functions on many levels simultaneously, and will give back value not only to the owner but to the community and society in which it is constructed. If architects are educated primarily in the ways of producing a functional commodity, this aspect of architectural excellence will be forever beyond their grasp.

A liberal understanding of the wide variety of human experience will serve architecture students well as a base on which to build their technical and aesthetic responses to the built environment. Education must also expand the student's perspective into that illusive third dimension which separates great buildings from only temporarily good ones. One cannot teach a specific course which gives this additional dimension. It is rooted in a broader understanding of the human experience. It is only obtainable by a look into many subjects not seemingly related to architecture, ranging from histori-

cal perspective to contemporary thought.

Architecture students and many faculty may not see the relevance to architecture of a course covering the political background of the authors of the American constitution. However, such a course may give a great deal of insight in the long run to those architects involved in the design of publicly funded buildings. Such a course can give the architect a more complete theoretical background about the differences between a county courthouse and a medium-sized office building than lectures or projects architectural educators can provide. Although each of those building types may house the same number of persons, all doing similar contemporary office tasks, there is a real need for them to be quite different, both inside and outside. A broad understanding of the history of our governmental system is a very important factor in the design of government buildings.

In contemporary architecture there is too little understanding of the symbolic differences between functions, and we end up with buildings that may be used for any purpose. Those buildings are not satisfactory in the long run to the public which they serve and will never be considered good architecture by either the lay or the professional person. The problem can be traced to the lack of understanding, on a deeper level, of the use of buildings as more than enclosed functional space wrapped in a pleasant facade.

With the traditional five or six years of architectural education it is virtually impossible to include the wide ranging liberal background necessary to build students' understanding to add this additional dimension to their architectural work. Courses are needed which do not focus on buildings exclusively. The real unmet need in the field of architectural education is for understanding of how buildings fit into the complex society which builds them. In addition, students need a base to evaluate how buildings are perceived by that society after they are constructed. Only with a look at our world from the many other approaches not related to buildings will a student ever grasp just how their part will fit into the complex overall picture. This is one reason why only a limited number of buildings built in the past 40 years have any long term architectural merit. We have become so obsessed with the need for functional space that meets all specific identifiable constraints that we have missed a broader need to understand how buildings fit into society as a whole.

It would appear that some of the reason behind the entire historic preservation movement that we have been witnessing in recent years may result from not just the merits of the reuse of older facilities, but because those buildings seem to offer a cultural and design quality reflecting our culture which is lacking in many newer buildings.

A liberal arts background is a highly desirable part of an architectural education, and the educators of the future architects would be enhancing the profession greatly if that path was approached with higher esteem than it is currently. A broader understanding of the entire human experience will allow students and architects of the future to fit buildings not only to the clients specific needs but to those of society as a whole.

"On the Liberal Education of Architects"

Neville Clouten and Cheryl Jetter
Lawrence Technological University

The essential differences between general education and liberal education can be traced to their Latin roots. L. *generalis* indicates the belonging to a species, relating to every member of a class. L. *liberalis* speaks of freedom. From this, general studies would provide the skills necessary for each individual's success in a career and professional life. Liberal studies should set the individual "free" from a narrow cultural or a focused professional context to see larger contexts.

The internalization of general education skills can best occur early, no later than the end of the first year of college, and these skills will then be used throughout professional education. Teachers are paticularly pleased when individuals entering the freshman year of college bring with them the skills of clear and concise writing, accurate spelling, good reading, clear and accurate verbal communication, and mathematics skills. In the absence of an adequate basis from high school for other than the exceptional student, the first year of tertiary education must include these general studies "for every member of the class". However, general education goes beyond the one-time acquiring of skills, for students who enter college with adequate skills should go on to learn how to apply those skills to new contexts and in new environments. Students learn that reading and writing are about language, and they begin to see how language can shape their thinking and later become a powerful tool in communicating to others that they are a certain kind of professional.

The first year of the 4 + 2 professional degree program in architecture presupposes that time is needed for students to complete a base of skills so that a sound strategy in general education can be implemented. The first year of the 5-year professional degree program has little time for general education skills, and yet it must still provide the strategy for development as an investment for later years in college and professional life. It is even more important in the 5-year program that remedial classes in general education be prerequisites for admission to the professional program.

The liberal education of individuals who are in the process of receiving a professional education should address the following outcomes:

1. Exposure of the individual to a variety of approaches for interpreting reality: scientific methods, mathematical models, logic and reasoning, cognitive understandings of music and painting, literary and symbolic models, language and computer-based models.

2. Recognition of the individual's own cultural context, the symbolic basis of the cultural myth, patterns of social behavior and societal expectations.

3. Understanding by the individual of other cultural contexts and the recognition of the simultaneous existence of different "realities" and approaches to reality through the exposure to alternative symbolic systems, other patterns of social behaviors and societal expectations.

In any professional degree structure, the increasing focus on core architectural studies may crowd out the benefits of an early and isolated inclusion of liberal studies. The above outcomes for liberal education are particularly applicable to the inductive mode of teaching in the senior and graduate years, rather than the more deductive methods of the earlier years.

The changing profile of entering university students is applicable here. We know that the percentage of traditional students coming directly from high school is decreasing. The population bulge due to the baby boom of the 1960s will continue to affect student numbers in high age groups. Lynton and Elman have predicted that, while small liberal arts colleges and largely residential universities will continue to maintain an undergraduate student

body of mainly full-time students, the greatest change in attendance patterns will occur in the many other universities with more flexible admission policies, particularly those in metropolitan areas with many commuting students. In these, relatively few students are likely to enter as freshmen immediately after high school graduation, and even fewer will graduate after four years of uninterrupted study and from the same institution. These universities are also likely to be most affected by the second trend that is pushing higher education into an essentially lifelong pattern.

A more mature student who has been in the workplace for some years, and who has had to deal with the complexities and conflicts of the real world, is not drawn to a situation where he or she must sit in a lower division class and, in a deductive teaching mode, be given courses to fulfill a liberal education requirement for a professional degree. On the other hand, there may be real interest in opportunities to enter an interdisciplinary upper division or graduate course where the problems from the real world are the focus, and where the liberal education components of, for example, the behavioral sciences or philosophy are inductively drawn from the complex situation to general principles. It is here that we come close to Donald Schön's description of the reflective-practice studio. Reflection-in-action occurs "in the midst of action without interrupting it" and "serves to reshape what we are doing while we are doing it."

The interrelations of the design professions and close associations with many academic disciplines can help to vitalize the complex and ambiguous problems from the real world. Liberal education is a key part to the inductive methods of a reflective studio which sets out to meet Schön's description of the relevance of society's needs and the need for academic rigor.

By way of summarizing this essay, we so often decide in our Western societies that we can have an "either ... or ..." alternative. The computer is conditioning us even more. Bolter has suggested that "the issue is not whether the computer can be made to think like a human, but whether humans can and will take on the quality of digital computers." Instead of real world experiences where decisionmaking is filled with ambiguity and complexity, decisionmaking in a computer-conditioned world would be reduced to a series of questions with either/or answers.

It is both the early inclusion of general education skills with a sound strategy for building on these, and the later truly liberal education that may guide us in the professional education of architects. First, the general skills are sharpened early and are used to the benefit of all that follows. Later, liberal education should expose the individual to a variety of approaches for interpreting reality, helping the individual recognize his or her own and other cultural contexts and "realities". This would vitalize inductive, reflective studios. This will take the student beyond graduation from a professional degree program on to practice, post-professional education and to a truly liberal continuing education. Liberal studies then assist architecture and architects in the human context that is broad and deep and endless. When architecture encounters other contexts of liberal education, relationships form, and in these relationships we find the grist for living and for art.

The continuing experiences of a liberal education and the "CE" professional courses are necessary parts to the education of architects — professionals who are widely read, well able to express ideas and critical judgments, and who are resilient to changes in society and the professions.

"Architecture and the Liberal Arts: A Case Study in the Acquisition of an Education"

Jon P. Coddington
The University of Tennessee
College of Architecture and Planning

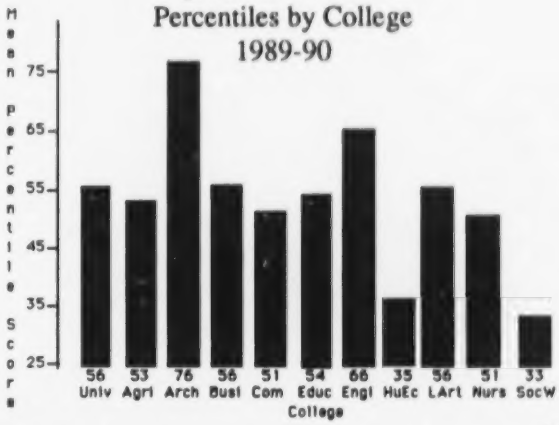
By requiring students to receive a formal liberal arts education prior to entering a professional architectural program, there is an implicit assumption that a liberal arts degree offers a broader and more thorough educational experience than does the undergraduate architectural degree. It is thought that the liberal arts degree prepares students to deal more effectively with a broad range of issues, ideas, opportunities and change which as architects, they must inevitably face. Various forms of this idea are of course not new, with the Princeton Report of 1968 being only one of many examples. However, since that time much has changed concerning the undergraduate liberal arts experience, with many commentators maintaining that the quality of undergraduate education has in fact diminished over this period of time.

Given such a state of affairs, we can no longer assume that a liberal arts degree as it presently exists provides a more thorough grounding in the arts, sciences, and humanities than any other undergraduate degree. Indeed, the latest data gathered at The University of Tennessee by the Office of Institutional Research suggests that at least at that University, architecture students are gaining a more extensive and comprehensive liberal education than students in any other undergraduate college, including the College of Liberal Arts. A case can be made that if one is seeking a liberal education at The University of Tennessee, one should turn to the University's architecture program for it is there that one has a better chance - at least statistically - of achieving an integrated educational experience.

Over the last eight years, the University has made a concerted effort to try to understand its effectiveness in teaching its undergraduates; particularly how much "education" has been added to the student during his or her stay there. One of the major quantitative measurements used in assessing the value added is the College Outcome Measurement Project (COMP) which was developed by the American College Testing Program (ACT). Because the COMP is given to all entering freshmen and graduating seniors, it is possible to measure the "educational gain" achieved by each class in each undergraduate college. The COMP tests six general education outcome areas: functioning within social institutions, using science and technology, using the arts, communicating, solving problems, and clarifying values. While the above areas may not match in kind or emphasis all definitions of the qualities of a liberal education, hopefully there is enough overlap to at least provide a basis for the discussion which follows.

Figure 1 shows that architecture students achieved the highest total mean percentile score of any college at 76%, with the university wide and the liberal arts scores at 56%. This graph indicates that on the average architecture students know more in the six areas being tested than any other group of students. It should be noted that these scores are not adjusted for the amount of knowledge with which a student comes into the program. However, if a mark of an educated person is somehow related to those areas of knowledge being tested, then architecture students are the most educated and knowledgeable group of undergraduate students graduating from The University of Tennessee.
Figure 2 shows comparative results in the area of

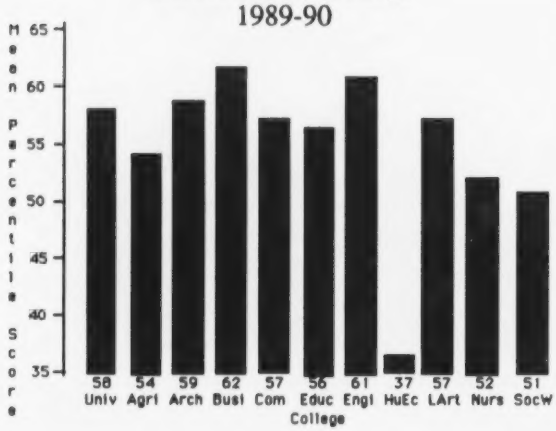
Figure 1: Total Score Percentiles by College 1989-90



Functioning Within Social Institutions. This instrument is designed to identify those activities and institutions which constitute the social aspects of a culture (for example, governmental and economic systems, religion, marital and familial institutions, employment, and civic volunteer and recreational organizations); to understand the impact that social institutions have on individuals in a culture; and to analyze one's own and others' personal functioning within social institutions. The results show architecture placing third overall behind business and engineering and just slightly ahead of liberal arts and the overall university score.

Figure 3 shows that architecture students finished

Figure 2: Functioning Within Social Institutions
Percentiles by College
1989-90



first in their ability to use science and technology. This area identifies those activities and products which constitute the scientific/technological aspects of a culture (for example, transportation, housing, energy, processed food, clothing, health maintenance, entertainment and recreation, national defense, communication, and data processing); how well a student can understand the impact of such activities and products on the individuals and the physical environment in a culture; and how well a student can analyze the uses of technical products in a culture and the personal use of such products. Here architecture students scored 75%, while liberal arts students scored significantly lower at 55%.

Figure 3: Using Science and Technology
Percentiles by College
1989-90

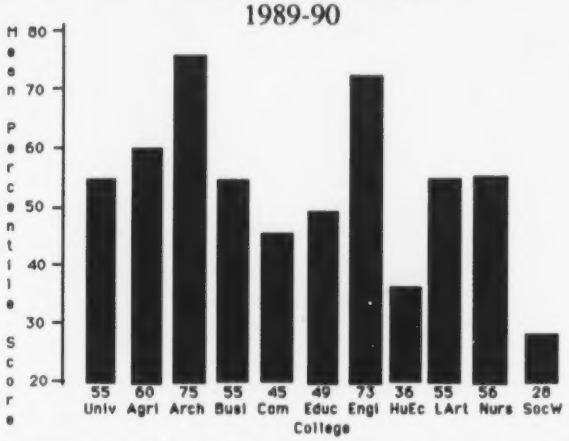


Figure 4 shows architecture students outstripping all other students from various colleges, in their ability to use the arts. This category identifies those activities and products which constitute the artistic aspects of a culture (for example, graphic art, music, drama, literature, dance, sculpture, film, and architecture); how well a student can understand the impact that art, in its various forms, has on individuals in a culture; and the student's ability to analyze uses of works of art within a culture and his or her personal use of art. Here architecture scored almost 80%, with liberal arts only scoring 60%. (It should be noted that the School of Architecture shares its building with the College of Liberal Art's Department of Art. The proxemics, the continuous displays of artifacts, and the formal and informal interaction which inevitably occurs among faculty and students, must contribute to these significant results.)

Figure 4: Using The Arts
Percentiles by College
1989-90

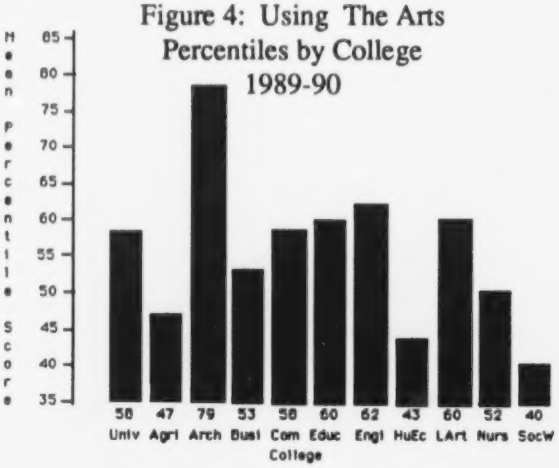


Figure 5 speaks to the issue of communicating. This instrument tests the ability to send and receive information in a variety of modes (written, graphic, oral, numeric, and symbolic) within a variety of settings (one-to-one, in small and large groups), and for a variety of purposes (for example, to inform, to understand, to persuade, and to analyze). Here again architecture is near the top with liberal arts slightly below the university wide mean percentile score.

Figure 5: Communicating
Percentiles by College
1989-90

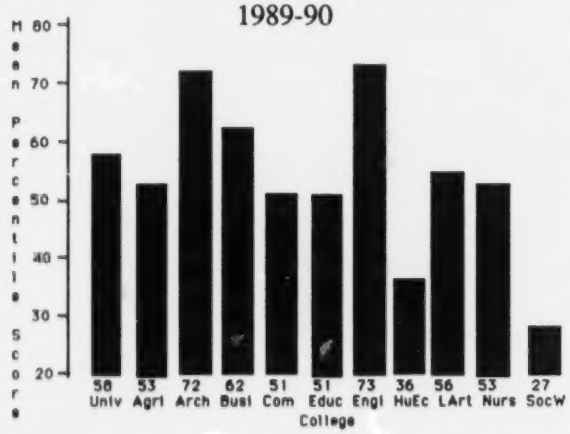


Figure 6 gives the scores in the area of Solving Problems. This area analyzes a variety of problems (for example, scientific, social, personal); selects or creates solutions to problems; and implements solutions. Architecture again scored the highest of any college.

Figure 6: Solving Problems
Percentiles by College
1989-90

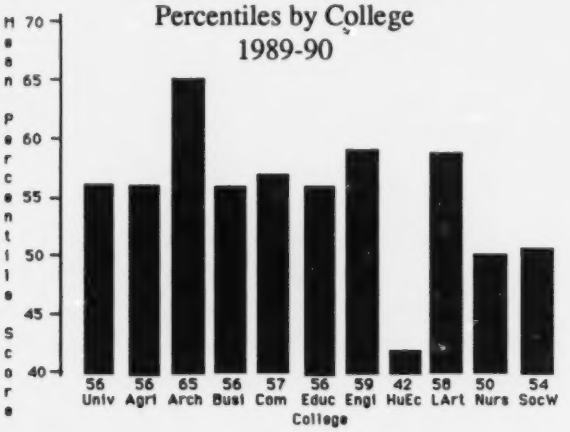


Figure 7 is a graph concerned with the topic of clarifying values. This area identifies one's personal values and the personal values of other individuals; it identifies one's understanding of how personal values develop; and analyzes the implications of decisions made on the basis of personally held values. The extremely strong showing of architecture compared with other professionally oriented programs as well as with liberal arts speaks well of the architecture faculty's ability to transmit the idea to their students that each line drawn has both an ethical as well as a technical dimension to it.

Figure 7: Clarifying Values
Percentiles by College
1989-90

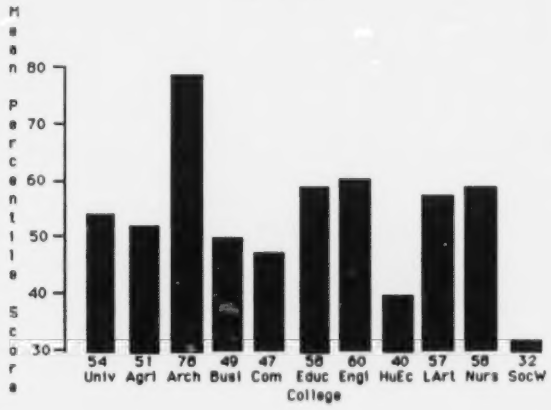
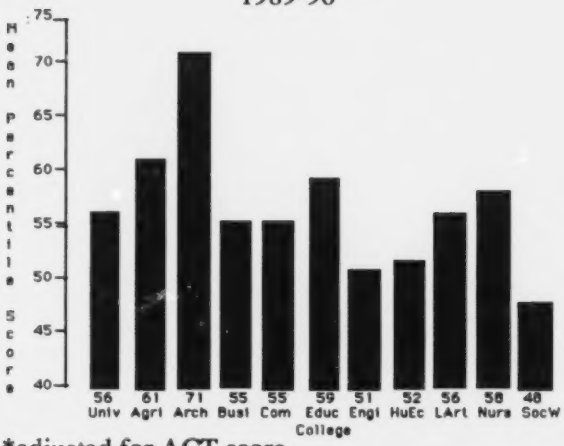


Figure 8 summarizes the scores on the COMP test while making an adjustment for the student's entering ACT score. At U.T. the average, freshman ACT scores in architecture and engineering are higher then in the other colleges but through regression analysis it is possible to statistically negate the original discrepancies to further ascertain the value added by each college. The fact that it is more difficult to "add value" to students who initially have high scores further strengthens the already impressive case that the architectural program at The University of Tennessee provides a broader and more comprehensive general educational experience than any other found on campus, including the College of Liberal Arts.

Figure 8: Total Score
Percentiles by College *
1989-90



*adjusted for ACT score

Three questions arise from the above analysis: are these results peculiar to The University of Tennessee; do these measurements indicate that education has indeed taken place; and if so what are the elements in an architectural education which may be useful as we consider the reform of the undergraduate experience?

To answer the first question, comparable data is needed from other similar institutions. Such comparative data is not available at this time, although Louisiana State University, Pennsylvania State University, the University of Detroit, and the University of Oklahoma have all used the COMP test. However, the apparent lack of breadth and depth of analysis from these institutions compared to Tennessee's analysis, coupled with the fact that the data are apparently not broken out by colleges, makes it difficult to legitimately use the data for comparative purposes. At this point it is impossible to say definitively whether these results are peculiar to The University of Tennessee or not. What is known is that neither the architecture program nor the liberal arts program at Tennessee are particularly noteworthy, in either a positive or negative sense. One has the suspicion, therefore, that while the particulars may vary from institution to institution, the overall results may very well be the same.

The second question is also difficult to answer directly, for in the end it is suspect to base any significant conclusions about education on a series of statistics. After all, the purpose of an education is to cultivate the life of the mind and soul and to make sure that the fruits of the cultivation are made available to individuals and to society. The intellectual and ethical habits that are learned in the university should stay with its graduates for the rest of their lives. To have truly learned something is indicated by a change of attitude and behavior.

Do students in the architectural curriculum behave differently than other undergraduate students? Recognizing the limitation of the COMP test, the Office of Institutional Research asks a series of supplemental questions to graduating seniors which begin to gauge the students intellectural habits and their "satisfaction" with their educational experience. Since many would argue that the university's central function is that of criticism, it is possible to look at behavioral areas where criticism can be manifested. For it is the function of criticism that allows "the free play of the mind on all subjects", as Matthew Arnold observed.

Early on, architecture students are exposed to a community which uses criticism as a basis for informed action. The philosopher Karl Popper maintained that it is only through criticism that knowledge can be produced. Criticism enables us to correct our prejudices and liberates us to see new possibilities. It is a process which must be both inward directed and outward directed. It is a habit that begins to distinguish an educated person from an uneducated person and it provides a basis for lifelong learning. With this in mind, it is interesting to note that while the data indicate that architectural students received the best general education on campus, they were among the most dissatisfied with their perceived ability to gain a broad education at the University. It is also interesting to note that architecture students seem to spend more time reading unassigned material than any other students from various colleges and, not surprisingly, they check out more library material than any other group on campus.

Architecture students are much more likely to attend a campus play, see a film in the campus film series, or choose to attend a guest lecture or special seminar than other undergraduate students on campus. These are all forums for criticism and provide alternate ways of looking at the world. Most importantly, the data collected from our alumni, indicate that these habits and attitudes continue after graduation.

It is possible to suggest that at least at The University of Tennessee, and perhaps at other large research-oriented institutions, it is the liberal arts who should turn to architecture as a source and a measure for its reform. There is nothing unusual about the School of Architecture's curriculum that would particularly distinguish it from other architectural curricula around the country. However, it does contain elements that are being called for to reform higher education; a study in depth during the final year; a range of multicultural opportunities; the ability, indeed the necessity, to work with primary materials; integrated team-taught courses which in this case combines engineering, design and theory; and a sense of community and intimacy created by close faculty contact and a commitment to work. Unlike the liberal arts where there is little concensus about what constitutes the essential education of a student, there is remarkable similarity of curricular content in undergraduate architecture programs throughout the country.

What fundamentally characterizes the architectural undergraduate experience from others found on campus is its focus on design. Design is not only a skill-oriented endeavor but also it is an integrative undertaking which is at the core of the educational experience. The general emphasis on design as a way of learning about something apparently develops remarkable critical skills which encompass broad areas of knowledge. To design something is to learn about that thing. Design is an active enterprise rather than a passive one and by necessity it involves clarity of thought and organization to be noteworthy. Design and the critical analysis that inevitably accompanies it, allows a student to find out what he or she knows and what he or she doesn't know. Design is not only an expression of critical thought, it is also indicative of process and it shows a student how he or she thinks their way into a subject to make it their own. Design as an expression of our discipline has a sense of public accountability that is difficult to find in the more private, autonomous worlds of the departments which constitute the liberal arts. In the more intimate but public world of architecture programs, a student can not easily detach himself or herself from the work at hand. An architectural education is one of engagement, not of abstraction and hence facts and beliefs become inextricably linked as each student must take some form of public responsibility for his or her work. It is not surprising that architctural students score well in clarifying values and the fact that the score is so significantly better than all the others from various colleges and professonal programs on campus indicates that something unique is at work in the architectural curriculum. The liberal arts would do well if they found their equivalent to design.

Hence the factual as well as ethical education which architecture provides its students begins to match closely with William Perry's final developmental pattern of the undergraduate; namely one "who has learned to think about even his own thoughts, to examine the way he orders data and the assumptions he is making, and to compare these with other thoughts that other men might have. He realizes he thinks this way not because his teachers ask him to but because this is how the world 'really is', this is man's present relation to the universe. From this position he can take responsibility for his own stand and negotiate - with respect - with other men". If these are characteristics of a liberally educated person, and if both data and observation suggest that undergraduate architecture programs produce such people more consistantly than do liberal arts programs at major universities, then it is the liberal arts who should turn to architecture to discover the rigor, purpose, and content that mark any kind of coherent educational experience.

"From a Historian's Point of View"

Harold W. Cooledge, Jr.
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The reasoning behind the exclusively professional programs in "Modern" architectural education which were implemented in Europe between 1890 and 1920 --- such as that of the Bauhaus --- were not understood by most of the Americans who sought to replicate them under different conditions in the United States. *The critical mistake was failure to recognize that graduates of secondary education in Europe would enter professional training having already received a thorough grounding in the humanities and the liberal arts.* In the United States only college graduates from those rare institutions which required a broad general education in all curricula would possess such a background. The great expatriate teachers, Gropius for example, who built the first "Modern" programs in this country were not aware that this was the case. On coming to the United States, most of them became associated with private universities whose architectural schools were open only to graduate students, and on the assumption that an undergraduate degree from an American college signified the same grounding in general education as that received in a gymnasium or lysee, they structured graduate architectural programs which were professionally specific and highly concentrated.

As a result, several critical generations of architects who received their professional degrees between 1932 and 1952 from graduate schools like Harvard, and who had not received a broad general education in college, were divorced from the humanist bases of their profession. These particular generations were "critical" because so many of their members became teachers of architecture - professors, department heads and deans --- who attempted to promulgate the "Modern" systems under which they, themselves, had been trained. However, as a general rule, they were not associated with graduate programs in private universities, but with undergraduate programs at state colleges where they were faced with a problem which they had not been prepared to meet: how to merge and proportion the demands of undergraduate education with the demands of professional training. What were the priorities? There was only so much time, even in an extended program, and if students were to graduate with a marketable degree --- as their parents reasonably expected --- how much of education was to be sacrificed to training, or how much of training to education?

This problem had been faced by medicine and law many years before, and both disciplines had progressed from the European tradition of "reading," "clerking" or "assisting" with an established practitioner, through programs of limited graduate instruction preceded by specialized undergraduate curricula (Pre-Med. and Pre-Law), to full professional graduate schools followed by internships of varying length and specialization terminating with licensing examinations. By this time, the Pre-Law and Pre-Med. undergraduate programs had been discarded in favor of a broad general education, with perhaps a mild concentration in the biological sciences for medicine or government/economics for law.

Engineering schools and institutes of technology have begun to consider this same educational organization, after being told by the industries which hire their graduates that those who can read comprehensively, write coherently and speak convincingly, and who are informed about more than their own specialities are the most desirable employees. Only the outstandingly brilliant specialists, whose domain will be the research laboratory, can now afford to be selectively illiterate. The adaptive generalist, who can become a temporary specialist in any of several related fields will be preferred over the one-job "working stiff" who is rapidly becoming as obsolete as the slide rule and logarithm tables. It seems likely that the various subspecies of engineering will become departments in an overall "Graduate School of Applied Science" - or some such title --- and the undergraduate preparing for one of them will major in general education with a mild concentration in physics and computer

science.

Architecture --- except in the European-form or apprentice-form schools --- has dithered from expedient adjustment to expedient adjustment in efforts to structure undergraduate programs as similar as possible to the graduate ones under which the "critical" generations were trained. By and large, this has meant concentration --- bringing as many as possible of the technical and support courses "in house" --- and expansion --- devaluing the five-year bachelor's degree so that it became necessary to add a two-year additional program granting a master's degree. All this without leaving the undergraduate camp, for few, if any, state institutions would consider elevating architecture to an entirely graduate level. To do so would add a minimum of one year, more likely two, to the existing program and greatly increase the cost to the student of an architectural degree, which the financial base of neither state nor parents could easily support.

This prompted a closer, and less antagonistic, look at the former, "pre-Modern" program of undergraduate architecture, which the "critical" generations had tried to discredit and supplant. It had been a binary system composed of the American Beaux Arts program for design, and a cadre of technical subjects taught by other divisions of the college. This system possessed two great strengths: The first was the mystique of design which college administrators had been conditioned to accept as different from all other academic disciplines. Design was an "art," and as such its products could only be judged by qualified architectural "artists" whose judgments were as much subjective as objective. This effectively removed design projects from standard grading procedures, and gave the architectural faculty wide discretionary powers. It also gave design students a cachet of uniqueness, of which they took full advantage. In extreme cases the department/school/college of architecture became like an exclusive club with its own rules and mores, some of which were contradictory to those of its parent institution.

Second, and counterbalancing this tendency to exclusiveness, the technical and support courses, required for a professional degree, were not taught "in house" but by a variety of other disciplines --- physics, chemistry, civil engineering, and so on. This served the double purpose of throwing architectural majors into regular contact, and competition, with a wide variety of other students, and of forcing the design faculty to consider the interests of other departments/schools/colleges than their own. This was helpful in bridging the gap between design and technology and promoted a symbiotic relationship between the designer and the "architectural engineer" --- as they should properly be called, even today --- as the latter had to build what the former drew. The "architectural engineer" --- or building science major, if you prefer --- by having a foot in both camps made "art" more understandable to technology and drew both closer to a common goal.

As a result of this binary form, the "pre-Modern" system of architectural education enjoyed a clumsy, but workable, integration with the undergraduate program of its parent college, a condition which "Modern" systems have rarely achieved. From their inception in Europe, "Modern" systems had taken over the design mystique and extrapolated it to embrace the entire architectural curriculum by concentrating all of the technical and support courses within the department/school/ college of architecture. In the United States this extrapolation caused undergraduate programs to lose contact with --- and, eventually, understanding and support from --- those disciplines which had formerly been adjuncts of the architectural curriculum. With this increased isolation from the body of humanist education, the elitism, which had always been a factor in relations between architecture and other disciplines, became defensive, architectural students feeling that even the bare minimum of courses in general education which they were required to take deprived them of time and effort more profitably spent on design projects. These attitudes were reflected in the projects themselves, which --- following the example of "leading" practitioners who were also isolated and defensively elitist --- became so theoretically abstract as to have little

interest, or meaning, for any but other architects. The aim of architectural education became increasingly verbal and academic; to have a project published and discussed was more important than having it built.

Unease with the products of architectural education in the United States became evident in the mid-1950s when graduates of "Modern" programs began haring off after new aesthetic philosophies, most of which were literary in origin, and attempting to adapt them to design. The call for a return to mass mediocrity by Robert Venturi, the high-style plagiarisms of Philip Johnson, the pseudo-historicism of the Post Moderns, and the intellectual masturbation of deconstructivism were all reactions to an unfocused recognition that something was missing from architecture as it had been taught by members of the "critical" generations.

As a historian, who is also an architect and a member of the "critical" generations, I think it is past time architecture recognized that it can no longer be effectively taught as an undergraduate, or even partially undergraduate, discipline. The direction of design philosophy, at any particular institution, is unimportant --- let prospective students shop around until they find an environment which suits their prejudices --- the administrative structure within which that philosophy is taught is vitally important. So, set up a graduate school of three, or at the most four, years. Demand of entrants an undergraduate A.B. or B.S. degree which includes a thorough grounding in the humanities and liberal arts. Return all of the "in house" courses to the disciplines to which they belong. Restore the disenfranchised B. Arch. to its proper graduate status. Offer it and the M.Arch. - the latter to exceptional students only --- but no Ph.D. In planning, history & theory, maybe, but a doctorate in design is like a long codpiece, decorative and impressive but meaningless.

"Who Should Shape Architectural Education? The Liberal Arts Graduate"*

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*A Walter Wagner Forum Speech.

Architectural education is shaped most significantly by the kind of education students have when they begin their professional architectural studies. This assertion is backed up by much direct evidence in architecture and corroborative evidence in other fields as well. Indeed it seems almost a universal fact throughout higher education that the best predictor of achievement is the ability and understanding students bring initially to their college experience. The implication of this fact for architectural education is quite clear: a sure way to raise achievement in architectural education would be to require a bachelor of arts degree of all who enter professional architectural programs. No one can deny that the traditional B.A. degree, rigorously taught, would have made a tremendous difference to all our architectural graduates, had they gotten one before they began their professional studies. Who then should shape architectural education? The liberal arts graduate, of course.

But most architectural faculties in North America have not taken the liberal arts seriously. Most architectural faculties don't require entering students to have a liberal arts degree. Why not, when legal, medical, scientific and many business faculties do?

Do architects receive fewer years of formal education because architecture is less important to our society than science or business? No! Or is there less education because architecture is less complicated than medicine or law? Certainly not! Or is it because architecture has less effect on people than chemistry or psychology? Decidedly no! Or is it because architecture has changed less than medicine or law by the rapid technological and social changes in our society as it advanced from an industrial to an information-based economy? Very unlikely! To these five questions, nine out of ten architects and architectural educators will answer "no". A wide variety of people educated in other professions, including doctors and lawyers, would agree in an almost unanimous negative!

So what's the answer? Architects answer the question—"why don't architects receive as much formal education as doctors and lawyers?"— by saying that they don't earn as much as doctors and lawyers, and therefore can't afford such a long formal education. But given the fact that the most important determinant of earnings in our society is the number of formal years of education a person has, wouldn't it make more sense for architects to stay in school longer if they want to make more money? The correlation between education and earnings is as true for architects as it is for teachers and other professionals.

Secondly, architectural educators answer the question by saying that an undergraduate degree in architecture or environmental design is an acceptable, perhaps even superior substitute for a liberal arts education. The argument goes that architectural education is basically an exercise in problem-solving, as if problem-solving were the heart of the liberal arts. This means we can do in five or six years of architectural education what it takes other faculties at least seven years to do. We can provide, basically without help, a liberal arts education and a professional education. Few outside of architecture who teach the liberal arts and themselves have a bona fide liberal arts degree believe it possible, and none define the liberal arts as problem-solving.

We all know architecture is different but why did our colleagues in medicine and law begin to insist at least 50 years ago that students who wish to study their important, complicated professions must have the intellectual maturity gained in the substance of a liberal arts degree before they learn to lift the scapel or stand for the defense? Law and medicine are problem-solving disciplines too. Problem-solving is a basic human condition and basic in any educational process. If you didn't have problems

to solve, how could you teach anything? The liberal arts, like any other discipline, have their own content, their own problems to solve, and their own ways to solve them-tested by long tradition.

The most recent NAAB guidelines for accreditation suggest that 20 percent of the courses in a professional degree in architecture must be in the liberal arts and 80 percent must be in architecture. This accreditation guideline suggests a degree almost exactly opposite from a liberal arts degree—which by tradition says that 70 percent of the courses students take must be outside the major field—which itself may be a liberal art! A degree in literature or language or chemistry or psychology is not a specialization which permits the student to practice in that field. Rather the major in the liberal arts gives students a hook to hang their educational hats on while they are taking a broad range of courses outside of the major. This doesn't sound like any architecture degree I'm familiar with. The NAAB guideline perpetuates the false notion that the liberal arts really have no content that can't be covered rather quickly because the liberal arts are mostly process—that is problem-solving. Nothing is farther from the truth!

A liberal arts degree requires that students solve very specific problems—not just any problem. First, the liberal arts student must be required to read and read and read and write and write and write. Reading is still the essential and primary means of learning philosophy, religion, literature, languages, mathematics, the physical and biological sciences, and the social sciences. Writing is still the essential and primary means of demonstrating a knowledge of these liberal arts. Through a significant quantity, quality and type of reading the student also learns how to be a careful and perceptive reader, a skill whose value cannot be over estimated. Further, in the liberal arts writing and thinking are synonymous. If you can't write well, you don't think well. The student demonstrates thinking ability by knowing how to organize thoughts cogently on paper, a skill that in school shows, let us say, an understanding of Socrates' trial. In life after school the ability to use the written and spoken language is a determining factor sometime in one's career—usually early but in some professions later.

Go down to the university bookstore and count how many and what kind of books are required by the whole faculty in architecture, and compare that to the books required by one or two faculty in the liberal arts. The difference is utterly ridiculous. Architecture students, whose college work according to NAAB can be 80 percent outside the liberal arts, are not required to read very much or very widely. The architectural historian usually requires three times as much reading as other architecture faculty but these requirements do not add up to very much.

Writing has fallen even further than reading from favor in undergraduate architecture curricula. Most architecture students don't write more than one term paper, if that, in any semester. By the time the president pronounces them ready to meet the world after four or five years of college, our students have spent most of their time doing everything, it seems, but writing. They certainly don't write three papers a semester, which is about average for liberal arts majors over eight semesters. Of course the liberal arts students must pass dozens of written exams, and many of those examinations require essay answers. In contrast, most examinations in architecture outside of studio are multiple choice and do not require significant essay writing. The studio usually doesn't require writing either. The studio hardly ever recognizes the problem students have with language, written or oral, at all! Where in the studio sequence of ten semesters do we formally teach our students how to make design presentations?

Practicing architects do no give our newly graduated architecture students high marks in either writing or speaking. In a 1983 survey of 2000 architects in Iowa, Nebraska, Missouri, and Kansas, some 700 architects complained not only about the writing and speaking abilities of new graduates but also about their own abilities to write and speak as well. They were quite dissatisfied with them-

selves in this regard, and they felt new emphasis was needed in writing and speaking. Why were they so dissatisfied? They were so dissatisfied because writing and speaking are so essential, and these skills were ignored in their architecture education. These architects were asked to rate the importance of all the basic skills and knowledge necessary to practice architecture. Writing and speaking tied as the most important skill. Design fell somewhat below writing and speaking in importance. All the other skills and knowledge architects felt important fell behind design.

Combining a liberal arts and architecture degree into a five year or even four year program may have been possible 50 years ago when the state of primary and secondary education in America was quite different. At that time students came out of high school as literate human beings, which is not the case for many students today. Fifty years ago our fathers had three years of Latin upon leaving high school, even if they were from small rural high schools from Kansas towns. Now the school board gets upset when it is asked to reintroduce two years of any foreign language for all students. Besides the fact that we are now dealing frequently with functionally illiterate students out of high school, architecture appeared less complicated in every way 50 years ago, even as the world was less complicated then. But in spite of all this change, the nature, content, method of teaching, and means of demonstrating architectural knowledge have essentially not changed in fifty years. We still use a Bauhaus educational model, which was developed for already very liberally educated students from the German gymnasium. The Princeton Report and all the changes in architectural education as a result of that report were and are nothing more than a slight-of-hand and a restatement of the old. We just added one more year of the same old thing and called the sequence liberal. There is almost nothing liberal about the 4 + 2, anywhere.

It is time that architectural educators emerge from their time machine to recognize a simple fact: architecture degrees cannot deliver in four or five years at a 20 percent clip the basic skills of reading, writing and speaking required of all liberally educated students, complete the liberal arts content of philosophy, religion, literature, language and all the rest and in addition teach all the old and new architectural knowledge required for that initial step into the profession. The result is a weak professional, and a weak profession. Certainly our advisory boards recognize this weakness. Our board wants us to teach more writing, more speaking, more computing, more management, more technology, more drawing, more psychology, ethics, and western civilization. We are supposed to add all this and more without taking anything out of our curriculum. It can't be done.

We must instead revolutionize the steps required of all students to attain an architectural degree, and there is precedent for this revolution. We must recognize what the Graduate School of Design at Harvard recognized in 1936: architecture is a specialization that most students are capable of learning best with a strong liberal arts degree behind them. This accounts for Harvard's commitment to graduate architectural education as the first professional degree. This would not be an entirely new idea in many other schools since many of us have special programs for just this kind of student. Architectural education should eliminate the five year undergraduate program and the four-plus-two which is nothing more than one more year of the same old thing students get in a five year program. Neither is a liberal degree, and both degrees impose architecture on the student earlier rather than later in their college careers. In summing up a 1975 conference about undergraduate non-professional degrees in architecture, Kenneth Frampton warned against early specialization in architectural education. There is also ample evidence that shows clearly the advantage older students have over younger students in learning architecture.

If architectural education wants to provide its students a liberal degree, which they desperately need to function in our society, and an architectural degree as well, it must adopt a four plus three sequence for all students. In the first four years students should certainly study architecture, but 70

percent of the coursework should be outside this major, just as in any other liberal arts degree. This Bachelor of Arts in Architectural Studies must include some studio experience that introduces the visual language, requires students to gain some fluency in it, and emphasizes the synthesis of disparate information. All students in all fields need this fluency as more and more information becomes visual, and every liberal arts degree in every field should add this requirement. The degree must also include a strong, general technological component and a senior capstone requirement that focuses on ethics. These additions are improvements that have been ignored by and are needed in all liberal arts degrees today, not just the one I propose. These improvements would represent architecture's unique contribution to the strengthening of all liberal arts degrees. This degree will not lead every student to advanced architectural studies because it is a liberal degree. Those who wish to become professional architects will take up the three year sequence of architectural studies at the graduate level. Others will be well prepared for a great variety of professions and will support architecture as informed clients and enthusiasts. To flourish the architecture profession needs this support form non-architects. With this kind of education we would not be so uncomfortable with the five questions asked at the beginning of this essay comparing architectural, legal, and medical education.. With this step we should also, according to long-term, statistical facts, increase the average salaries architects can earn and their abilities to command as well. Who Should Shape Architectural Education in the 21st Century? The student, a liberal arts graduate, of course.

"A Definition of the Comprehensivist"

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The Vision 2000 study initiated by the American Institute of Architects has set in motion a new wave of concern about the role of the architect in the twenty-first century. As a part of that activity the traditional role of the architect as generalist has been called into question. This role is most commonly understood to be related to the evolution of a project and the phases it passes through from conception to completion. The architect is thought of as being able to guide all of the activities required to produce a constructed environment. It has become increasingly clear that the traditional boundaries which guide this process for architects do not in all cases, or maybe not in any case, serve the architect well. It is believed by many that the architect enters the building process too late and leaves the process before all of the critical decisions are made, leaving the product (the building) vulnerable to misuse and establishing a poor image of the role and responsibilities of the architect.

Futurists are generally in agreement that the thrust of the twenty-first century will be focused on the management of information. For architects this means their role will be an interpretive one requiring decisions which will lead to consequences resulting from the interaction between complex disciplinary bodies of knowledge ranging from history, anthropology, sociology, economics, politics, engineering, art, information science, and many others. Clearly the process of interpreting how the world "is" and making judgments about how the world "ought to be" leaves little, if any, knowledge or skill outside the realm of the role of the architect.

A review of the Vision 2000 Trend Study suggests several shifts of priority and focus of the work of the architect serving society in the twenty-first century. Examples of these shifts include changes in the national mood toward pragmatism and "taking responsibility" for a new social ethic grounded in a return to traditional commitments and a search for self-fulfillment. This will be coupled with a renewal of idealism to resolve problems, thus creating a higher quality of life. The demographic distribution of our population will necessarily produce several significant changes including slower growth rates, increased average age, increased numbers of women in the workplace, and a shift in numbers of minorities in the population.

For the architectural profession the "era of building" will shift the nature of practice from new construction to rebuilding the decaying infrastructure in America's older public and private sectors. This will include rehabilitation, retrofittting, and restoration of residential, commercial, and institutional environments. This will also result in the development of what is being termed the "urban village," a pattern of growth clustered around large regional shopping and work centers. In addition, this shift will result in the small to moderate-sized cities in the U.S. becoming the centers of new construction and development.

Advances in technology will continue to create major shifts in the activities of the architect, including the adaptation of the computer to the professional workplace. This new tool will assist in organizing data, making design decisions, creating the production documentation, and managing the complexities of the new service/business industry of the architectural profession. Energy concerns will return to play a major role not only in the formal design of building but also in the selection of materials and construction processes. New synthetic materials will revolutionize the way we build and in the utilization of the physical environment will become automated with human workers being replaced by systems of robotics.

Shifts in economic conditions such as the globalization of the economy, adaptation to foreign trade markets, and increased demand for a larger variety and higher quality of products will change our levels of production, utilization, and distribution of

natural and human resources. The continued worsening of environmental conditions will refocus our interest on issues of population control, air and water quality, utilization of non-renewable resources, and food production. This concern will result in the growth of a new environmentalism based on the concept of the citizens' "right-to-know" and their participation in the process of resolution.

The nature of the workplace will change in response to a transition from an industrial to an information-age society. One factor influenced by this change will be the moving of the office closer to home. There will be a greater emphasis on productivity to assure more competitive positions in the new global economy.

Finally, the trend of increased state and local influence over governmental and political control will continue, with greater democratization of the decision-making process being extended to a larger segment of society. The result will be increased regulatory control and increased accountability related to the services and products of architecture.

For the architects this expanded context and role will reveal a new form of professional practice and an expanded role for the architectural educator in preparing the future architect. One manner for illustrating this change is to position the architect as a comprehensivist. What is this new comprehensivist? On one level it suggests that individuals filling this role must possess a broad, general education much in the tradition of the formal, liberal education of the nineteenth and twentieth century where a priority was placed on the development of "good citizens" capable of interacting within their environment through a critical review and evaluation of everyday life. In addition, it means a commitment to a professional orientation grounded in a process of synthesis based on broad and diverse arenas of knowledge, skill, and expertise. This process of inquiry into the relationships between the built and the natural environment as well as creating a balance between the technological and artistic capacities of society. This will require individuals to be well educated in the methodologies and theories of design decision-making, the historical and contemporary roots of the built environment, the technologies for its construction, and the strategies for managing the interactions of these components in professional practice. If this role of the comprehensivist is to be pursued in a serious manner, it must be directed by three simple principles: 1) the profession must be dedicated to the conservation, design, and construction of the physical environment, 2) the activities of conservation, design, and construction must be carried on at the highest possible theoretical and practical level, and 3) architecture must be seen as a learned art, a social art, based upon the learning process committed to action. This action must be guided by theory and method as well as the tools of practice and management.

It is also important to note that the twenty-first century will present problems that we are not even aware of today. To meaningfully address these situations, the architectural profession must be committed to providing not only an educational environment to prepare this new comprehensivist but, at the same time, provide the opportunity to undertake specialized research at the post-professional level through Masters and Ph.D. degree programs. It is through these efforts that the profession is provided a self-renewal mechanism, one that will not only assure a solid foundation for current professional activity, but also a self-correcting future.

The first step in accomplishing this end requires a review and evaluation of the current delivery systems of first professional degree programs to assure that the framework is capable of adjusting to the new role. As a part of this review and evaluation, it is important to carefully focus on the structure of cognate professional activities in medicine, law, dentistry, pharmacy, education, etc., to determine the appropriateness of their delivery models for adoption to the architectural context. In addition, a careful assessment of the role of architectural education in the university setting is required to determine the opportunities for connect-

ing to, and participating in, the larger, comprehensive mission of post secondary education. Finally, it will be important to determine the potential of the current structure of the architectural profession to participate in a meaningful linkage of the academic and practice settings, integrating this process of inquiry into the relationship between ideas and action, theory and practice.

As a point of departure for this review, evaluation, and proposed action, it is important to articulate a conceptual structure for addressing these critical changes, which as noted earlier, will result from the trends predicted during the twenty-first century that will define the role of the new comprehensivist architect. First, it should be apparent that the foundation of the educational experience required is a comprehensive general education including an awareness of the values and attitudes of past and present cultures; an understanding of the standards and expectations that guide human behavior; an understanding of the concepts and principles which govern the phenomenon of everyday life including the natural, artistic, technological,and social world in which we live, work, and play; an ability to identify, evaluate, and act on issues in a rational, logical and coherent manner; and finally a competence to effectively convey this awareness and understanding through writing, drawing, speaking, and listening in an accurate and honest fashion.

In addition to this foundation as the first building block, the next component must provide a comprehensive first professional degree educational experience. This must include the understanding of the cultural and physical context of architecture; the processes of environmental modification and change; and the human, economic, legal, technological, material, and practice delivery systems which form the basis for architectural action. It should not, however, be forgotten that there is one element that constitutes architecture; architecture is the continual search for the art inherent in each action we take, reminding us of our responsibility to focus on the application of knowledge and skill to interpret, construct, and assign meaning to the world we build.

Finally, the art of making architecture is neither a private endeavor nor one of short duration. As a result, the profession must provide a mechanism to guide its future. The mechanism for accomplishing this goal of self-renewal is the establishment of post-professional educational opportunities to set future professional agendas, to undertake rigorous investigation through research to articulate future knowledge and skill requirements of the profession, and to contribute to the quest of understanding the phenomenon of the world we inhabit.

To accomplish this end requires that the current eight year path to licensure in architecture be modified to include a four-year baccalaureate program of study emphasizing the general and liberal education of a "well educated citizen" in the classical sense, followed by a three to four-year professional architecture degree program, and a two year integrated internship experience jointly sponsored by the academic and professional community prior to licensing. It should be noted that these three elements could overlap, reducing the time required for such a proposed program of study. In addition, post-professional degree programs should be offered ranging from one to three years to provide the opportunity in appropriately structured institutions for specialization in one or more of the multi-dimensional futures of our profession in the twenty-first century.

In summary, this new role of a comprehensivist will require a major commitment on the part of professionals and academics to work cooperatively to transcend the everyday pragmatic problems of education and practice and to establish an optimistic vision of the role of architecture in the twenty-first century. It is time to believe in ourselves and in our future. Our strength is in our commitment to achieve a common set of goals in an environment guided by reason and trust.

"Learning From the Liberal Arts"

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Builders know how to build; why does the world need architects? What is it that distinguishes architects from builders? One presumes that the difference lies in education. The education of the architect, which is compulsory, must extend beyond issues of building and construction, the concerns of the builder. By dealing with a broader range of issues and participating in a larger intellectual tradition architecture is distinguished from building. While builders build well, their expertise lies in the realm of the "is". They are best at replicating existing conditions and reproducing the status quo. Architects on the other hand, through their knowledge of larger cultural conditions and their consideration of factors beyond the immediate issues of shelter and construction, are prepared to make proposals concerning the "ought". What distinguishes the architect from the builder is the ability to analyse a situation from a variety of viewpoints and make a considered proposal of what "ought" to be done.

This places great demands on the education of the architect. In order to be able to communicate his or her position clearly, the architect has to be both visually and verbally articulate. The architect must also be well educated generally. Beyond understanding how buildings work, the architect has to understand how the world works; culturally, politically, and ecologically. Architecture informs and is informed by culture and the architect has to understand the ways in which his or her building participates in the public realm. In his description of the disciplines an architect should know, Vitruvius includes history, philosophy, optics, mathematics, astronomy, medicine, and music. These disciplines all contribute to the architect's ability to make informed judgments. They also describe architectural discourse as a confluence of languages derived from other fields. This multivalent and indeterminate aspect is typically revealed in definitions of architecture. From Vitruvius's "venustas, utilitas, firmitas" to Le Corbusier's description of architecture as precise, mathematical relationships which touch the heart, (the melding of the rational and the emotional), architecture is portrayed as a complex balance of various interests. This is also made plain in the presentation of architecture in terms of its reconciliation of opposed categories: public vs private, figure vs ground, real vs ideal, earth vs sky, etc. Requiring knowledge of both form and idea, art and science, ethics and aesthetics, nature and culture, it is easy to see architectural education as a latent liberal arts education in its own right.

In fact, the goals of liberal arts education would serve well as goals of architectural education. These were concisely stated in Harvard University's 1945 "Redbook Report": to think effectively, to communicate thought, to make relevant judgements, and to discriminate between values. The primary concern is on the development of the individual's faculties and interests, but there is also a strong regard for society's interests and the "supreme need for a unifying purpose and idea". From Chicago's Great Books curriculum, Columbia's required course in Contemporary Civilization, and E. D. Hirsch's recent call for cultural literacy, educating citizens in their common cultural heritage has been an important item on the agenda for the liberal arts since World War I.

Architecture is not a value-free activity and architects clearly have the same needs for well-formulated values, skills in critical thinking and knowledge of their cultural heritage. The question is whether this is best gained through undergraduate study in architecture or in another liberal arts major?

While there is general agreement as to the goals of liberal arts education - the cultured citizen who is liberated from ignorance - there is little consensus as to how to achieve this, or as to what constitutes a liberal education. Debates over teaching process vs content, the stability or contextual nature of

truth, the relative importance of canonical works vs minority or multicultural perspectives, and the professionalization of liberal arts disciplines due to Ph.D. pressures have all contributed to what was termed a crisis in the liberal arts in the nineteen-seventies. As cultural consensus and values have disintegrated, schools have opened up their curricula and allowed students to write their own course of study. Like snowflakes, no two transcripts are alike. In itself this is neither decidely good or bad, but it introduces a tremendous degree of uncertainty should the profession of architecture rely solely on a liberal arts education in a field other than architecture as a prerequisite for graduate study. That uncertainty is manageable in small numbers, and in fact becomes a virtue in terms of diversity in teaching small groups of graduate students with no prior background in the field. But, all liberal arts backgrounds are not equal and rather than becoming the dominant model of architectural education, these programs should remain competitive, admitting only the best prepared applicants.

A far better solution is to incorporate the goals of the liberal arts into architectural education. This balance between liberal and professional education is seemingly difficult to achieve. Five year programs tend to tip the scales toward design and technology to the exclusion of literary and verbal skills, while many 4 + 2 programs lean in the reverse direction resulting in 4 + 2-1/2 or 4 + 3 sequences. Through good use of liberal arts courses and the inclusion of architectural theory beyond an introductory 101 level, it is possible to incorporate both a rigorous six-semester studio sequence and liberal courses in cultural knowledge into a four-year undergraduate curriculum. Essential to the success of such a program is the commitment of all of its components to the same goals: development of the student's values, knowledge of the world and ability to think, communicate, and pass judgment.

Architectural theory plays a key role in linking the study of architecture to liberal arts concerns, and it is often the component missing in professional programs. Theory most specifically takes on the task of studying the relationship between forms and ideas. It engages issues in many areas; from philosophy, sociology, and critical theory, to art, poetics, and perception psychology, and links them to architecture (either as form, urbanism, construction, etc...) It provides the framework to which students can apply what they have learned about the world to architecture. Most importantly, it assists students in the determination of values and principles. Distinguished from the prescriptive methodologies laid out by technical theories as to beam sizes or footcandles, architectural theory is speculative and allied with the humanities. It is concerned with the big un-answerable questions; who are we, why are we, and what ought we do.

The need for grounding architectural study in knowledge of the world is increasingly imperative as both architecture and education get swept up in the currents of post-industrialism. Computers, with their emphasis of process over content, and the placelessness of telecommunications threaten to distance architecture from its role as the durable representation of human action and the elaboration of place. Architecture, like place, is becoming technologically obsolete. To remain relevant, architecture needs to address this changing culture and propose an appropriate, considered response. Only by confronting culture critically, making proposals as to how things ought to be, and vitally connecting the self to the world, will architecture maintain its significance. Otherwise, if architecture simply becomes a matter of private agendas and technical means, we might as well leave it to the builders.

"A Liberal Education for Architects"

Phyllis Fast
Division of Architectural Services
State of Kansas

The suggestion that architectural education should be increased from the traditional five-year bachelor of architecture degree to a six-and-one-half year masters degree throughout this country conjures up a myriad of questions. Who will bear the additional financial burden? What type of student will have the perseverance to pursue a six-and-one-half year program as the only path into the architectural profession? What type of student will have the ability to know and have the desire to pursue their specialized skill after five years without benefit of practical experience? Will participation in a six-and-one-half year program at one school restrict students from "broadening their horizons" in another setting? If a more liberal education is necessary, how does making it a six-and-one-half year program benefit our future? In terms of practical experience, how many years will a one-and-a-half year masters program equate to?

The first question will weigh heavily with those whose education is their own financial responsibility. Because obtaining a five-year bachelor of architecture requires more financial resources and more study time (per credit hour) than the average college degree, how does one find adequate time to work (or borrow substantial sums of money) in order to have the proper amount of money to complete one's studies in six-and-one-half years? Because the "working" student may find this difficult, the need to extend the time beyond seven years may prove to be too formidable a task and thus undesirable to pursue.

If more architectural education is necessary, what is the profession prepared to provide in the way of incentives to motivate students to pursue a six-and-one-half year degree? Is the profession ready to increase its basic fees for architectural services and pay higher salaries for graduates with masters degrees? How is the profession currently handling students who graduate with a masters degree?

If a student has the financial resources to complete a masters in six and one-half years, will he/she also have the perseverance to do so? Compared to other programs, which only require four-year bachelor degrees, five-year architectural curricula already seem like masters programs. I don't know if any comparative statistics are kept for "burnout" between students in the five-year architectural degree and students in four-year degrees, but there probably is a significant difference. If statistics do exist, I would be interested in the "burnout" rate, in those schools which currently offer six-and-one-half year masters degrees.

Third, if a student should be lucky enough to have both the perseverance and financial resources to pursue a six-and-one-half year masters degree, how many students will have the maturity and wisdom to know what specialized skill they wish to pursue after the fifth year? No doubt some students will know and have the desire to complete a masters before they leave the academic world for practical experience, but I don't believe many students have the desire to do so until they've been able to experience the practical side of architecture. Should these students be denied a professional degree because they require the practical side of architecture sooner than others?

And if a student does have the financial resources, the perseverance and the desire to pursue their specialized skill, will they be broadening their horizons by staying at the same school? Isn't the theory that completing a masters degree at a different institution and thus giving the student another perspective from which to view his/her field of endeavor valid anymore? Six and one-half years at the same school seems restrictive to me. Can one learning institution give students a broader perspective?

Another question that requires discussion is the need for liberal education vs. additional technical knowledge and/or development of architectural

skills. Although this discussion may seem endless, a few questions do come to mind: Isn't the process of blending art and engineering a part of liberal education? Isn't being on a college campus for five years a part of liberal education? Adding a year and a half to a five-year curriculum for the sake of giving the architect a more liberal education is hard to understand and seems unrealistic.

The final question, and maybe the toughest to answer, is whether additional education such as the extra year and one-half becomes equivalent to practical experience. Since architecture is an integral part of and a service profession to the community, isn't community involvement a part of liberal education? Isn't working with a variety of clients and building designs a part of liberal education? I have my doubts that additional formal education should be equated with practical experience, unless it follows at least two years of practical experience. Isn't the process of learning more effective when theoretical education and practical experience are alternated at shorter intervals.

If the goal of formal education is to teach the process of learning, why take more than five years to do so? If we no longer need the architectural skills and information we are currently being taught, then I suggest we continue altering the five-year curriculum in a systematic fashion and not discourage potential architects from joining the profession by adding years to an already lengthy educational process.

This is not meant to close the doors to those students who are fortunate enough to have the financial resources and perseverance to continue their education by pursuing a specialized skill before entering private practice. In some instances this path can be of greater benefit both to the individual and the profession. However, I believe the profession has a better chance of recruiting and educating the majority of future architects within a five-year curriculum coupled with practical experience.

When I read about the skills architects will need for the twenty-first century, I feel most of them listed are already being taught in our schools, and the remaining skills are learned through practical experience. Some of the skills I find to be lacking in the profession are business management, business law, and marketing. Only a handful of architects seem to recognize their value and are pursuing them to some degree. These are the skills I would recommend making available to architectural programs in lieu of more traditional liberal education.

"The Liberal Education of Architects: A Reflection"

Herbert Gottfried
Iowa State University

The University of Kansas School of Architecture and Urban Design is to be congratulated for having the foresight to address liberal education for architects through curriculum innovation and the convening of a national meeting on the subject. There seems to be some anxiety in both architectural practice and education having to do with the emerging sense of design, with a correlative doubt about architecture's relevance to global and local issues. It is appropriate to look to liberal education as a basis for addressing these problems.

It is not easy to define liberal education for architects, or as evidenced by our interactions at the conference, to enable discourse on the subject. In good tradition, we began the conference with a proposition, then turned to an inquiry, and balanced these with several position papers. We had the makings of a scholastic debate. But reactions to the presentations were limited to points of view about aspects of the papers, occasionally as counterpoints, and the discussion did not often transcend the level of isolated statements.

I suppose one reason for this difficulty was the majority of those in attendance were not the product of liberal arts education but of professional education. Thus, there was an absence of grounding in common values, texts, and culture that might have facilitated discourse. Maybe a couple of humanities professors should have been included so that they might talk about what it is they know. Our discussion, by contrast, was characterized by plurality, thus reflecting the current state of academic architecture.

The issue of grounding— sharing knowledge and means of inquiry— is central to the liberal system. In the Judeo-Christian heritage that underwrote much academic development, texts (theological and philosophical) were the basis for much grounding. Explication and the reconciliation of variant readings occupied the scholar's time. Debate over rival explications or readings became the basis for discourse. Architecture has not developed a comparable grounding, despite our preference for and even agreement on certain theoretical positions or pictorial references. And, while we respond with some enthusiasm to the paradigms of science and social science or to the historiographries of cultural studies, we prefer to limit our means of inquiry to studio. Studio remains our most frequently used situation for inveigling the so-called existential noment. In liberal education, that is the moment in which the locus of authority for the reading of the text falls heavily on the individual. That is the moment when each of us is required to construct an argument or a personal definition of truth.

At the conference, Diane Ghirardo asserted that studio fails at this enterprise and no one refuted her statement. If studio fails to live up to the historical basis of liberal education, it does so as a reflection of the peculiar nature of studio education, of its methods and social context. Its method brings to mind the classical distinction made between the two principal types of knowledge and the persons who have such knowledge; those who know from having sought higher knowledge (the knower, yates) and those who know by making things (the doer, fabricator). Plato states the latter has a lesser form of knowledge, and architectural education, for all its interest in the meaning of architecture, for all its enthusiasm for "why" we make it rather than "how" we make it, is grounded in knowledge gained from making. Alas, no architect will ever be philosopher king.

The existential moments in studio are two. First, there is the making of the mark on the blank paper, a moment we borrow from the world of art, and second, there is the moment of systhesis when the parameters, limitations, consequences of design decisions, and the like must be accounted for, when the argument must be drawn. That these are not the same as the quintessential liberal moments is due to

the previously mentioned dependence on craft and to the social context in which the students work. Liberal education is like baseball. Everybody playing is lonely and self-conscious. And chance, in the form of irrationality, illogicality or the failure of rhetoric, dominates the game. Architecture is group activity, and peer teaching, iterative learning, imitation, and group dynamics affect play.

Despite our differences from liberal education, there are avenues through which we might liberalize architectural education. We ought not separate knowledge from practice; our knowledge is based in making. We ought to make studio a true arena of discourse. Furthermore, we can fabricate new means of inquiry or new liberal-architecture subjects, what we might call design studies, in which we frame studio questions and map the culture of design. We can be much more systematic about charting the very nature of architectural knowledge, its boundaries, its terms. Lastly we can alter our attitudes toward ourselves, and own up to our own high purpose, to our role in the civilizational impulse, and remind ourselves that the trivium and quadrivium were written on walls.

"Defining Liberal Education in the Context of Architectural Education"

Linda N. Groat
University of Michigan

This symposium poses important questions about how professional education in architecture might incorporate or build upon a liberal education. However, to discuss exactly how a liberal education should best be imparted to (future) architectural students requires that we first consider the following three basic issues: 1) some definition of what a "liberal education" actually is; 2) an evaluation of the extent to which liberal education is actually achieved either within the undergraduate liberal arts model or in professional programs; and 3) the potential value that a liberal education might have for architectural professionals.

Given the 1000-word limit for these essays, tackling these questions in any more than a superficial manner is impossible, but I hope at least the general outlines of my perspective will be conveyed.

Defining Liberal Education. The concept of "liberal education" is so fundamental to our collective understanding of how universities are organized that we hardly bother to worry about defining it. But, as Turner and Bernard have pointed out, the liberal arts model of undergraduate education—and the concomitant notion of specialized graduate-level training—became the dominant paradigm of university education in the U.S. only at the end of the 19th century. Moreover, recent debates about higher education (as manifested in best-selling books by Bloom and Hirsch) have tended to advocate simplistic and/or reductionist standards by which to measure the quality of liberal education in our universities. The notion of a checklist of cultural literacy presumes that a discrete and specific body of material can be represented as the received wisdom of our culture.

In contrast, other educational theorists have offered a much more robust understanding of the concept of "culture," as well as the role of liberal education in fostering it. For instance, Michael Oakeshott, the renowned political philosopher, suggests that culture "may be recognized as a variety of distinct languages of understanding." He continues:

> Perhaps we may think of these components of a culture as voices, each the expression of a distinct and conditional understanding of the world and a distinct idiom of human self-understanding, and of the culture itself as these voices joined, as such voices could only be joined, in a conversation.... And perhaps we may recognize liberal learning as, above all else, an education in imagination, an initiation into the art of this conversation in which we learn to recognize the voices..., to acquire the intellectual and moral habits appropriate to this conversational relationship....

In essence, Oakeshott is suggesting that learning the art of "conversation" in our culture constitutes the primary purpose of a liberal education; moreover, the art of conversation entails learning about both the *substance* and the *manner* of such discourse. This notion of liberal learning is echoed as well by Herron who argues that the university is most properly the stage for intellectual and political conversation, a place of culture where "the work of language—literacy of various sorts—is to go forward". Ultimately it is the process of such conversation which gives shape to our public life.

Three Impediments to Liberal Education. If we accept the concept of the conversation (in its fullest sense) as the ideal of liberal learning, it is nevertheless not entirely clear that this ideal is being consistently realized in university education either at the undergraduate level, in professional programs, or even more generally.

Undergraduate Education. Despite the fact that the liberal arts paradigm is almost universally associated with undergraduate education, the realities of

the undergraduate experience may be far removed from "the conversation of liberal learning." In particular, Oakeshott sees two major threats to liberal education: 1) that preoccupations with the goals of the here and now may preclude the kind of reflective interlude which is necessary to true conversation; and 2) that the emphasis on abstract skills (e.g. critical thinking or reasoning) often vitiates the substantive content of learning. Yet a third threat to liberal learning is identified by Herron. He argues that in recent years, most academic disciplines have so narrowly construed their scholarly specialities that "conversation" with the culture at large—even including their own students—has ceased to exist.

One might wish to take issue with either Oakeshott or Herron about how prevalent these failures are; however, it is absolutely clear that an undergraduate liberal arts degree by no means insures that the conversation of liberal learning has been properly nurtured.

Professional Education. Although common academic parlance assumes that professional education follows in a sequence after liberal education, many thoughtful educators would argue that liberal education is in fact integral to professional education. Indeed, the former dean of Michigan's Law School, Terrance Sandelow, states flatly that: "A good graduate education is ... a continuation of liberal education". In elaborating how legal education can contribute to liberal education, he suggests that one might study law "for the same reason that one studies poetry or anthropology, as a means of acquiring a better understanding of the human condition". And in an echo of Oakeshott, he too proposes that even in professional education one hopes to achieve a "conversation" among disciplines.

This ideal of professional education is, however, only imperfectly realized. Too often, Sandelow argues, professional education is driven by the concept of "professional competence" which is equated with the ability to perform specified tasks. As a consequence, many professional programs are founded on the belief that their mission is primarily to train students for such tasks.

Anti-Culture. The definition of liberal education which has been advanced in this paper conceives of liberal learning within the context of "culture" in the broadest sense of that term. Unfortunately, however, recent analyses of the fundamental tenets of modern thought suggest that culture itself is a devalued—or perhaps even denied—concept. For instance, Cahoone goes so far as to suggest that the underlying epistemological assumptions of modern thought constitute anti-culture, poststructuralism being only the most recent and radical manifestation of this tendency. In this light, then, the notion of promoting and/or fostering the "conversation of liberal learning" is inherently problematic. In other words, any culturalist view of liberal learning is immediately limited and constrained by a milieu in which the very idea of culture is implicitly called into question.

The Value of Liberal Education for Architects. As the analysis above suggests, the ideal of liberal education is only imperfectly realized not only within professional education but even within the liberal arts undergraduate model. It further suggests that no one pedagogical structure in architectural education would automatically insure that future architects are properly nurtured in the conversation of liberal learning.

This point brings us quickly to the question: does it matter that architects are liberally educated? Certainly many scholars would argue that liberal education is both a prerequisite to and a component of professional education generally; some of those arguments have already been stated. But in addition, are there tangible benefits that would be especially important or necessary for architects? I would like to suggest that at least two potential benefits would particularly accrue to architecture.

First, architecture as a discipline would significantly benefit from better "conversation" with other aspects of our cultural life. Current architectural practice has in recent years concerned itself with

arcane design issues which are either irrelevant to or misunderstood by our culture at large. Reorganizing the structure of architectural education will not automatically rectify this situation; however, a serious commitment to the principles liberal learning might yield at least modest improvements. To be specific, if a student has been well initiated into the conversation of liberal learning (whether this is in high school, college or during professional education is immaterial), s/he will have begun to appreciate already the value and necessity of the other "voices" (domains of endeavor) in our culture. Thus, the student would recognize that to engage in this conversation as an architect, it is not possible to employ exclusively the discourse of architecture but instead a discourse which truly engages other voices. Architecture for the sake of other architects does not constitute a conversation.

Second, the practice of architecture would also benefit significantly from a reassertion of the sort of culturalist perspective implicit in the notion of "conversation" as the ideal of liberal learning. Modern thought has been characterized by such scholars as Bellah and Toulmin as focusing on the extremes either of individualism and/or subjectivism on the one hand or the determinism of natural or physical forces on the other hand. In such a schema, cultural phenomena—such as the conversational encounters of liberal learning or cultural artifacts such as architecture—are virtually negated. In an important sense, then, a commitment to liberal education for architects goes hand in hand with a commitment to reassert the value and power of architecture in our collective inheritance. Indeed, we owe it to ourselves to reaffirm our belief that architecture does have the power—like other cultural artifacts—to shape our public lives.

"Should an Architectural Education Require or Include a Prerequisite and Formal Liberal Education?"

Anthony N. Johns, Jr.
Professor of Architecture
Morgan State University

I have acquired my education via professional undergraduate and graduate studies, travel and work experiences. My formal education was not liberal whereas my travel and work experiences have given me insights and understandings of different cultures, languages, geography, and other liberal subjects. In brief, I feel I have acquired a liberal education by informal rather than formal means. It is from this background I address the question of should an architectural education require or include a prerequisite and formal liberal education?

The eleven months I lived in Heidelberg, Germany, in 1950 expanded my liberal education in several dimensions. I was twenty-two years old, a new second lieutenant in the U. S. Army Corps of Engineers, and Black. At that time, as a result of Army policies concerning all-White and all-Black units, I was one of three Black soldiers living in Heidelberg. I lived in a German hotel, with Germans and a few American civilians representing various agencies of the U.S. Government. Acquiring a working knowledge of the German language was my first objective. Once I felt confident with basic phrases, I began exploring the social and cultural fabric of Heidelberg. These explorations ultimately linked me with German university students of my age group. At the same time, I was learning more of their language and culture from the German staff of the customs inspection office that I directed. The history of Germany unfolded for me as my university friends and customs office colleagues gave me crash courses in German history. They carried me to many historical and cultural sites, institutions and activities, and explained the significance of each to me. I left Heidelberg feeling I had acquired a new language, an understanding of many aspects of German culture, a high regard for the German people, and insights into their education system. My university friends gave me an overview of the rigorous and highly directed education system that began with the Kinderschule, then the Gymnasium, and ultimately the Universitat. I consider these experiences more valuable than my formal studies of the language, culture and history of any country. They expanded my liberal education immensely.

My German liberal experiences provided a platform from which my architectural studies began in earnest. Then Germans, cultural approach to problem solving, construction technology, craftsmanship and design clarity was at all times an inspiration. My first architectural designs were inspired by German notions and motifs, but my paramount concern was always for the people who ultimately occupy the architecture when built. Somehow, my German experiences caused me to appreciate the human qualities of people and their cultures more than anything else. Isn't this the goal of a liberal education? Yes, the evidence supports this thesis.

The benefits of a qualitative liberal education in the study of architecture surface in two distinct areas:

1. Human behavior as a design generator.
2. Human behavior in business relationships.

Human behavior as a design generator

For years architectural schools relied on history, art and social science courses to acquaint students with what is known about human behavior. Now, some schools require more than one course in human behavior as a part of their programs. In a related manner, many schools operate design studios and offer other courses in foreign countries as a part of their educational programs.

The courses in human behavior and the studios in foreign countries aim to expand a student's awareness of other cultures, languages, and geographies. Once these studies and experiences are completed, students develop new questions about design and

other issues. These new questions are design generators.

Several architects have provided illustrative architectural designs outside their native countries that demonstrated their ability to design for people and places foreign to their native home. Frank Lloyd Wright's design of the Imperial Hotel in Tokyo, Le Corbusier's Carpenter Center at Harvard, Mies van der Rohe's Seagram Building in New York, Max Bond's Library in Bolgatanga, Ghana and I. M. Pei's extension of the Louvre in Paris, all demonstrate the designer's ability to digest and incorporate a foreign culture into their architectural design. These designers acquired considerable knowledge about other people and places mainly by reading and travel, and in some instances via a formal liberal education. Max Bond's and I. M. Pei's educational backgrounds include formal and informal liberal education. Bond completed a formal liberal education at Harvard College prior to studying architecture, whereas Pei completed high school in China, did limited engineering study at the University of Pennsylvania and subsequently studied architecture at both M.I.T. and Harvard.

Bond went to Ghana, West Africa, shortly after graduating from Harvard's School of Design. There he taught architecture at the University of Science and Technology in Kumasi, Ghana, and after being there for approximately one year, he designed the library in Bolgatanga. Bolgatanga is more than 200 miles from Kumasi and has a climate and geography substantially different from that of Kumasi. His library design embraces the geography and climate in its use of materials and natural ventilation provided, while the culture and customs of the people are evident in the forms, sequence of spaces and ornament. The people of Bolgatanga and Ghana now celebrate the architectural design of the library, so much so, it can be said, that the library is at ease with its location, use and clientele. Certainly, it is possible his design results mainly from his professional education; however, I am of the opinion his undergraduate liberal education in Harvard College, prior to his architectural education at Harvard's School of Design, provided a background for appreciating and adjusting the design to the differences Bolgatanga presented.

Pei's controversial solution for the enlargement and ordering of the Grand Louvre in Paris caused him to say in response to the question—"What lessons can be drawn from this experience in a place so marked by history and so dear to the French?" Pei's response was, "I grasp perfectly that the French are particularly attached to the Louvre. It is perhaps the most important architectural ensemble in France, at the Heart of Paris." He goes further in defending his design against the criticism. "The Napoleonic Courtyard is already saturated with architecture. Isn't the Pyramid shocking for that already eclectic nineteenth century mixture?" Pei further states, "It's true that the Napoleonic Courtyard has a very strong architectural presence, but it is not representative of the most glorious era of French architecture. The Pyramid and the basins that surround it constitute a minimalist geometric realization, closer to the spirit of Le Notre. I think they are truly complementary."

Each of Mr. Pei's answers were rooted in an understanding of the history and culture of France, although his high school education was obtained in China, followed by architecture at M.I.T. and Harvard in the U.S.A. Clearly, his diverse cultural background and liberal education enabled him to create a design that, while controversial, evoked the following response from Jean-Pierre Changeux, Professor at the College de France, in *Le Monde*, May 15, 1985: "The idea is brilliant. . . We can hardly be surprised that it should irritate a fistful of specialists whose professional activities orient their glances towards historical criticism rather than towards creation . . . A sculpture made of glass and metal, that in its purity of lines, reanimates the Napoleonic Courtyard . . . A work of today that breaks with the Second Empire style of the buildings and valorizes the sculptured decorations. A strong historical synthesis . . . A place for all the cultures."

Human behavior in business relationships

The Japanese are providing living illustrations of the benefits of learning other cultures, languages, and increasing one's knowledge of human behavior. They are able to communicate, understand and interact with people of other nations with confidence and clarity. Further, their understanding of the human behavior of their own people, and others, has enabled them to create new management/ employee relationships that have resulted in continued and outstanding productivity.

Given increasing travel and communications between nations and the resultant trade and business competitions, all nations must interact with other nations in an ever increasing manner. Understanding is merely a small step toward being competitive. Whether it is a foreign country or a state in another region of the United States, the need for understanding the culture, climate and language is a necessity for positive interactions, architectural or otherwise.

A global market requires the participants to be knowledgeable about world matters. A liberal education can play a vital role in preparing all professionals to compete in global affairs.

Even the military recognizes the need for understanding other cultures. On September 16, 1990, *The Washington Post*, reported that Air Force General Michael J. Dugan asked his planners to interview academics, journalists, "ex-military types," and Iraqi defectors to determine "What is unique about Iraqi culture that they put very high value on? What is it that psychologically would make an impact on the population and regime in Iraq"? Similar questions have to be addressed when one is engaged in business competitions. When liberal education provides a means for understanding human behavior, it is necessary and a fundamental foundation of one's education. It matters not which profession one ultimately engages in, nor in which country or culture, the reality is human beings are encountered in every aspect of one's professional life. In defining professional education a 1925 edition of *The Encyclopedia of Education* states that, "Even in the earlier period, the centuries immediately following the Renaissance, the education that was recognized as liberal was organized for certain classes alone, and in a sense was a professional education for a 'Gentleman.'"

Gentle people are needed as we approach the 21st century. Planet earth continues to become a global village wherein the villagers, (hopefully gentle people), will interact, communicate, understand each other, and peacefully coexist. Whether formal, as in Max Bond's education, or informal, as in Frank Lloyd Wright's education, a liberal education, or liberal exposures, can aid architects and others in surviving.

From another point of view, Thomas Merton, the Trappist theologian wrote, "the vocation of the person is to construct his own solitude as a condition, *Sine Qua Non,* for a valid encounter with other persons, for intelligent cooperation and for communion in love."

"Clarity, Reflection, and Accountability: The Nature of Architectural Education"

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Debates regarding the nature of education are useful for the opinions they reveal. The perspectives of the participants shape compromises which transmit into curricular patterns, licensing examinations and even expectations for professional performance. The discussion concerning the liberal education of an architect is the result of new perspectives regarding the future of the architectural profession and the need for a particular kind of individual to assume the role of an architect. It therefore seems appropriate to consider the nature of education and, in particular, the nature of architectural education. It is in this spirit that these observations begin with a line from a letter of Ludwig van Beethoven.

> Goethe I have told, how much I think that applause affects men like us, and that we want to be listened to with the intellect of our equals. — sentimentality might suit the (others) but music has to strike fire from the flint of a man's mind.

Striking fire from the flint of a person's mind is a powerful image. It conjures up the intensity of commitment of revolutionaries and opens a small window onto a powerful creative spirit. This is a realm where each act is symbolic, each contribution substantive and compromise unacceptable. It is a realm of intense intellectual stimulation which is psychologically terrifying because no aspect of the individual is safe from change and transformation. Failure is not a conclusion. It is a beginning. If the eyes are the windows of the soul, it is no surprise that the greatest minds have been described to have eyes which burn with determination.

The mythology of ancient Greece held the Titan Prometheus to be the shaper of man into whom the goddess Athena breathed life. It was his scatterbrained brother, Epimetheus, who was given the task of dispensing various qualities to man and animals. Epimetheus immediately gave the best traits, swiftness, courage, cunning, stealth, strength and the like to the animals and he left nothing for man. So as the story continues, Prometheus returned, gave man an upright posture like the gods and made humans clever. Later his affection for humans led him to bring the gift of fire. We know Prometheus by the gift of fire, but his gift of our minds' ability to grasp itself gives us direction and the opportunity to engage in language and history. This gift allows the human to gather facts and to make connections and, thereby, identify patterns. This, after all, is the gift of fire which Beethoven refers to in his letter.

The nature of education

The very center, the essence of education is the relationship between a student and a teacher. The teacher must determine on the basis of broader experience and greater wisdom how the discipline of life, of professional behavior, will come to the student. Through this relationship, education is directed to the individual and the responsibility for learning remains an individual commitment. Education must nurture the mind and foster beauty. This begins when we know the power of education and its ends. Education places tools and a means for understanding at the discretion of the individual. Conversely, the individual must know the burden of this responsibility. It is the individual who will realize education as a tool of professional behavior and as the representation of life. Students and teachers are thus called upon to work along the constructive traditions which brought civilization to life. Obviously this does not refer to only the architecture student. We must identify for the student, the professional intern and the practitioner activities which have made civilization what it is and to allow for the power of constructive activities. Education for a career which is overly focused upon a single aspect of the profession is incomplete. Rather, education prepares the individual to

resolve priority conflicts and establish a philosophical direction. The resultant product is a testimony to the power of integrative thinking which is at the core of an education. The studio, central to architectural education, is only a result of this preparation.

William Marlin, writing about Richard Neutra in a recent publication of Neutra's last writings "Nature Near", commented that Neutra was determined to design finer beliefs for people, not just buildings for them. There is no clearer statement of the nature of education or of social relevance as it applies to role and education of an architect.

The learned society

The study of architecture, its practice and its role in society define it as a learned profession. Alfred North Whitehead hypothesized that education follows a cycle toward mastery from romance, through precision to generalization. Each stage represents a phase of understanding and is often repeated in the process of learning toward mastering a profession. Throughout our career, we experience the romance of an idea followed by the necessity to gain detailed information. Generalization is a stage which comes with some difficulty. It is the experience of suddenly coming to a broader understanding of a collection of information. It is at that moment when it seems we are able to see above the clouds, the aha! stage of learning. To truly master a subject, we must experience this cycle over and over again. Some of us gain understanding faster than others. Frank Lloyd Wright and Le Corbusier reached a very high level of achievement through a combination of natural talent and fervent dedication.

Education, therefore, is an embryonic form of social and professional life and related practices. Ultimately, the American university has accepted the role of education as a form of community life. The university today is involved in every aspect of the student's life and learning experiences. The message is simple: education is important for personal development and critical to the evolution of society. In this regard, the profession has a greater responsibility toward the future and to the young beyond providing entry level positions. The young professional must be nurtured and given the opportunity to make contributions while growing into a comprehensive professional role. The learned society accepts a continuing learning pattern in life. Education is a societal priority not limited to the confines of the academy.

The dignity of the individual

The power of education is derived from the individual's need to know and to come to an understanding of the phenomena which structure our lives. Education is the means to give command of self to the individual and to train the individual to be able to fully utilize skills of hand, eye and mind. There are real choices in life and in professional work that the individual must be prepared to confront.

From the lessons of Greek mythology, Icarus with wax wings and, in another story, Bellerophon riding upon Pegasus, tested the limits of knowledge and human skill. But motivated by pride, they erred because of a selfish desire for learning. Ego and pride are questionable motivators. True knowledge is demonstrated by selfless action and is tested through professional behavior. This is the basis of architectural education. It has been hypothesized that there are three forms of knowledge: internal, which represents I.Q. and the ability to learn; creative, which represents the ability to solve problems in new ways; and external, which is best explained as street wise. The effective educational model is one that provides the means to identify these characteristics in the individual and defines a strategy to strengthen those that are the weakest. By shaping education to address the individual, we recognize the special qualities of each individual and reflect the belief that every person has the potential for a substantive contribution to society and to a professional community. Truly, the basis of this educational philosophy is the dignity of the individual. Virginia Gildersleeve, an early twentieth century educator from Columbia University,

wrote the following about the role of education.

> The ability to think straight, some knowledge of the past, some vision of the future, some skill to do useful service, some urge to fit that service into the well-being of the community - these are the most vital things education must try to produce.

To this I add:

The respect for the dignity of each individual, the ability to constructively recognize errors, the recognition of what has been done well, and further to realize the joy of new discoveries.

Our thoughts and philosophy of education are a product of the larger events about us. We expect education to propel us to a dramatic moment, a diploma or professional registration when, like the space shuttle, we break away into the weightlessness of space, intellectual freedom, absolute competency or whatever we call it. The truth is that there is no dramatic breakout or defined line. We slowly spiral upward gaining a broader perspective. The freedom we gain through knowledge is an inner freedom. Education gives us control of the line; it gives clear definition to the struggle and the joy of learning. An outer line will always be controlled by others and it will not be possible to attain any satisfaction, as it will continually move (the lesson of Icarus).

The perspective of the individual

Perhaps the nature of architectural education is best defined by the perspective we hold of the individual who will perform in the role of an architect. We may draw certain conclusions about education through consideration of various perspectives. Thomas Jefferson, as he prepared the plans for the University of Virginia, articulated his opinion on "the objects higher branches of education".

> To form the statesmen, legislators and judges, on whom public prosperity and individual happiness are so much to depend;
>
> To expound the principles and structures of government, the laws which regulate the intercourse of nations, those formed municipally for our own government, and a sound spirit of legislation, which banishing all arbitrary and unnecessary restraint on individual action, shall leave us free to do whatever does not violate the equal rights of another;
>
> To harmonize and promote the interests of agriculture, manufactures and commerce, and by well informed views of political economy to give a free scope to the public industry;
>
> To develop the reasoning faculties of our youth, enlarge their minds, cultivate their morale, and instill into them the precepts of virtue and order;
>
> To enlighten them with mathematical and physical sciences, which advance the arts, and administer to the health, the subsistence, and comforts of human life;
>
> And generally, to form them to the habits of reflection and correct action, rendering them examples of virtue to others, and happiness within themselves.

Jefferson's list of the objectives of higher education reminds those who prefer a specialized professional degree at the undergraduate level that much is expected from an educated person. We expect the architect to draw from historical perspective, to

listen to people without prejudice with appreciation for diversity, to transform ideas into three dimensional representations, to have an appreciation for making objects and an understanding of the processes and regulations which govern that activity. We expect an architect to lead in the evolution of the quality of the environment.

This is an ambitious expectation in addition to the items on Jefferson's list. They may ask whether specific preparation for a career may occur prior to a broad curricular exposure or if liberal study is necessary to understanding the discipline of architecture. Again, it is reasonable to look at the individual we expect to practice architecture. We expect the architect to deliver services beyond the construction of utilitarian volumes. We expect the architect to converse with a broad spectrum of society, accepting great cultural diversity as a fundamental responsibility. We expect the architect to accept both legal and moral responsibility in the manner of construction and use of buildings, thereby upholding building codes, making buildings accessible and considering the health and welfare of those who come into contact with buildings. We expect the architect to be an able project manager and coordinator who is able to manage timeliness, budget and program, while successfully conducting an architectural practice. Understandably, such a list of expectations may represent many years of learning along the already mentioned continuum between education and practice. Again, a thought from Mr. Jefferson:

> We do not expect our schools to turn out their alumni already enthroned on the pinnacles of their respective sciences; but only so far advanced in each as to be able to pursue them by themselves, and to become Newtons and Laplaces by energies and perseverance to be continued through life.

Jefferson has laid out an educational strategy which reflects what can be accomplished in the academy and what must be gained from experience and through personal initiative. Clearly, the base for professional education must be a well informed individual with a commitment to critical reasoning and lifelong learning. Such a conclusion has a significant impact upon the architectural curriculum.

The continuum

The study and practice of architecture lie on the same continuum. Professional behavior is first molded in the educational setting and the profession influences curricular patterns. The diversity of curricular paths within architectural education demonstrates its malleability as well as its vulnerability. The rich diversity of programs has made it possible for the individual, with enough resources, to enroll in a path which is best suited to regional characteristics, institutional personality, the local profession and personal preference. However, this same diversity has also led to programs so diverse that questions have been asked regarding program relevance given professional expectations. Clarity of purpose, reflection in practice and accountability for action are the hallmarks of the professional continuum and may structure the consideration of the liberal education of an architect.

Clarity

Much of the debate involving architectural education originates with the variety of professional programs in divergent institutions. What constitutes professional study and who is qualified to enter such a program is cause to carefully consider the nature of architectural education. While there is much that is positive about the diversity in professional education for architecture, there is also a resultant lack of clarity. The professional degree in architecture today is either an undergraduate or a graduate course of study. Entrance requirements to professional study reflect this duality. Accreditation requirements make no distinction between the programs.

However, if the nature of architectural education and the qualification or enhancement of such a

course of study is to be considered, then the fundamental differences in undergraduate and graduate programs must be taken into account. The fact that both programs exist, often within the same institution, is an indicator of the indecision regarding liberal education requirements that prevails among educators. Those who receive graduates of professional programs are often confused by the credentials they are asked to evaluate.

A professional course of study must articulate the means by which an individual is qualified to begin specialized preparation. Further consideration must also be given to possibilities for liberal study to compliment advanced professional coursework.

Reflection

Along the continuum of professional education and practice is the linking activity of reflection. This is the gift of Prometheus. It is the ability of the human mind to grasp its own actions while seeking perspective and higher meaning. Reflection is the act of a mature mind and a confident spirit.

The perspective required for reflection can only be acquired through the study of various disciplines and by nurturing rigorous inquiry. In architecture, design is as much a reflective as a proactive activity. As a component of architectural education, reflection transforms training into professional education. The linking qualities of reflection require substantial preparation in the liberal arts and depend equally upon advanced study in a professional curriculum. The maturity of the individual to foster critical thinking and to accept divergent opinions into a personal methodology requires that professional education extend beyond what is normally expected of undergraduate study.

Accountability

Accountability is a fact of professional activity, and therefore, it must certainly characterize professional education. Coursework in architecture programs must address issues as diverse as behavioral factors and professional practice. The complexity of professional practice justifies an accreditation process which will continue to become more rigorous. The necessary accountability of professional programs to practice while expanding the liberal arts aspects of architectural education demonstrates the contradiction of professional education in a traditional undergraduate program. As the expectations for professional education are made more rigorous to meet a more complex professional society, the need for higher educational expectations is also evident in a multilingual world culture. In undergraduate study, language, history and global politics will reduce core courses in professional study. If undergraduate education is to be maintained, new patterns will have to be devised to adjust to increased liberal education.

Curricular considerations

Society is rapidly becoming more complex and problems are increasingly interrelated. Therefore, to prepare individuals for life, the early stages of advanced education cannot be confused with career preparation. Similarly, the professional degree must become more rigorous and intensive. It has become necessary to recognize the need to prepare students in greater depth regarding the practice of architecture. It has also become evident that the study of architecture as a sophisticated discipline must be moved beyond undergraduate study. We will be required to develop specializations through doctoral and post-doctoral studies which reflect trends well underway in the other disciplines.

It is commonly held that the future will demand greater teamwork and diminish the importance of the individual. However, as a more cooperative posture is required from the individual, more preparation will also be required for the individual. This is an education of breadth and depth. The classic education provides the breadth of cultural literacy and the foundation for professional education which is a depth experience. Classical education is not defined by book lists or a chronology of historical figures, rather it is based upon the ability of an individual to think critically within the

context of civilization. It is upon the basis of these thoughts that I have come to the conclusion that undergraduate study will soon be inadequate as a terminal professional degree. Architectural education is by necessity moving toward an advanced professional degree. Given the perspective of time, such a curricular development is a natural evolution of the traditional Bachelor of Architecture curriculum.

The demands upon professional education extend beyond liberal education and preparation toward rigorous inquiry. Rigorous inquiry, through practice and research, can only be satisfactorily accomplished at the most advanced educational level. The Bachelor of Architecture, the four-plus-two Master of Architecture and the Master of Architecture as a professional but second academic degree all have deficiencies which will prevent the individual from adequately meeting professional expectations, and similarly, cause difficulty in meeting the standards of accreditation.

A curricular pattern which carries professional distinction is required -- the architectural equivalent of credentials found in law, divinity and medicine. Consensus on the basic academic pattern will clarify accreditation requirements and define for the profession entry credentials. However, the most important aspect of the clarification of the program will be the effect upon curriculum development. Such development in the course of study will enable programs to foster true diversity based upon the strength of faculty, the institution and the region. The greater sophistication of the student will allow for the incorporation of liberal studies at the advanced level which will nurture reflection. True advanced study will allow for the opportunity to acquire research skills and promote the study of architecture as a rigorous professional and academic discipline.

The paths to an advanced professional degree need not exclude undergraduate study. There is ample evidence in other academic curricula that preparatory work may be configured which will both attract students to the study of architecture and prepare them for advanced study. There is no evidence that such a change in the focus of architectural education would change its accessibility to the diversity of world culture or make it a more elite course of study. In fact, there is a possibility that the creation of a more holistically educated profession would prepare individuals to lead society and respond in built form to its diversity.

It is clear that the transition to programs requiring greater educational preparation has begun. There is increased accountability of architectural programs to the profession, to the institutions which host them and to the region where they are located. These programs will require more time for completion than the current professional degree options. The academy must seek a common understanding regarding the expectations of the profession while allowing for the discretion of individuals and institutions. The rigor expected of our profession by society demands greater attention to accountability. Education is expected to promote competent, reflective individuals. This task is now undertaken in most institutions with the distracting and complicating factors of undergraduate education. There is no reduced time plan for either a liberal education or a professional education. The time has come for the academy and the profession to accept this fact.

Conclusion

Education is a gift of fire. It must be kindled and tended as well as put to productive uses. If an individual chooses only to cook his/her own food with it and keep only themselves warm with it, he or she has failed the responsibility to advance culture. The effect of an education must strike fire from the flint of the human mind. This can only happen when there is initiative to go outside of the selfish attitudes we all harbor and address the issues before society.

Education is a search for the clarity of first principles; the foundation of our beliefs is as elemental to our work as fire, water and air was to the Greek philosophers. The liberal education of an architect

is the foundation of the individual intellectual search. Critical reasoning can only mature upon a broad base of information. The intuitive acts so often employed by a designer must be informed. The curriculum which best saves the individual search clarifies the expectations of those who wish to perform as architects, those who regulate architects and those who employ architects. Clarity of purpose without distractions can only be accomplished by a mature individual prepared to fully comprehend the demands upon the profession of architecture.

Through reflection, architecture is the means by which we improve the human condition. Each time we build, we have the opportunity to create a place that people must live up to, those building typologies which are democratic, the gathering places, the symbols of an inclusive culture and housing which allows every person a home with dignity. In the United States, industrial buildings were first employed in a utilitarian manner for storage sheds and agricultural buildings. Much later a group of architects utilized this vocabulary to evolve the most elegant architectural solutions for a variety of building types from single family homes to schools. The capability of utilizing technology in such a fashion is a testimony to the power of reflection, seeking higher meaning from the commonplace.

Accountability is the hallmark of professional behavior. Yet, we have developed a generation of stars and would be stars who consider their own interest above those of the people and the culture into which their work must fit. So much of the silliness experienced with the profession of architecture has more to do with capturing attention than it has to do with serious thought. Yet it has been draped with the affectations of intellectualism. This self-aggrandizement is causing us to admire second-rate architects who are first-rate showmen. These are not people for whom the fire is most important. For them it is the applause. The architect must accept the responsibility to represent a diverse culture and to apply talents toward the most pressing issues of health and welfare. Such a challenge must be met by the individual beyond the purvue of any regulatory agency or professional organization.

It is now necessary for educators and practitioners to cast aside the preconceptions and limiting fond, often romantic, notions of education and professional preparation. In the search for professional education, we must remain fixed upon the prepared individual rather than regulatory practices or determined paths. Certainly, diversity in the preparation of the individual to practice architecture will and must continue. Clarity in curricular intentions must make possible a diversity of opportunity. If future curricular strategies are based upon the individual, the future will certainly remain humane. As thoughts are set upon the future, room must be left for those who must live and work within it.

"Somewhere Over The Rainbow .... A Liberal View of Architectural Education"

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The unusual and even abberant title of this essay reflects both the author's scepticism of ideal models for architectural education and the fact that the issue is to be addressed yet again at a symposium to be held at the University of Kansas. As Captain Boyle observed to Joxer in Sean O'Casey's "Juno and the Paycock" "The whole world's in a terr...ible state of chassis!" Indeed it was; and in the intervening years little has changed in relation to the chaotic state of our universe. On the other hand, it is now generally accepted that chaos and the rapid changes that often engender it have been an intrinsic part of humankind's existence and are perhaps the price we are all fated to pay for what is perceived as progress. A decade has passed for example since Christopher Evans declared "The erosion of the power of the established professions will be a striking feature of the second phase of the computer revolution." and that, "the vulnerability of the professions is tied up with their special strength— the fact that they act as exclusive repositories and disseminators of special knowledge."

The changes experienced by the architectural profession over the last twenty years have just recently been documented by social scientist Robert Gutman. Educators contemplating change in the structure of architectural education have now a point of reference, a significant analytical study on which to base their prognostications. They should note especially Gutman's warning that the number of those entering the profession has increased at a time when the scope of responsibilities and interests of the profession have narrowed. Moreover while opportunity and earnings in the profession have diminished, architectural schools continue to grow in size and number as if the architectural profession was somehow immune from the law of supply and demand.

So far there is little evidence of concern for this economic predicament in the current debate. Instead, the ubiquitous search for the ideal model for architectural education continues along its well worn path of rhetoric. We are assured by one group of pundits that admission to an architectural program should be modelled on admission to law schools, that is admission should require a prior degree, preferably a liberal arts degree. Of course this is nothing new. Some of our most prestigious schools offer such programs. The difference here is the suggestion that this is the most successful model and *ipso facto* the only model.

These same educators would at the same time freely admit that their quarter century experiment of "broadening" architectural education by introducing the "four plus two" model recommended in the *Princeton Report* has not produced the desired results. Since educators and architects seem to be equally afflicted by the disease of utopianism they would do well to read Karl Popper concerning the pitfalls of holistic thinking before travelling down yet another culs de sac. It appears that what Maurice Bowra called "the Renaissance ideal of the omnicompetent man" long abandoned by liberal arts colleges may now find its place almost a century later in colleges of architecture if these educators have their way! Thorstein Veblen would have questioned even the place of architecture in a university as he did all business and vocationally oriented activities; education as an economic investment would certainly have appalled him. However, as we all know, his contemporaries William James and John Dewey won out on this issue and so we have the universities as Veblen forecast "competitors for the traffic in merchantable instruction".

If one looks at the competing merchandise of architectural schools across the nation one can certainly categorize those competing according to their different models (5-year, 6-year, 4+2, 4+3) but in reality no two schools are the same. Within the NAAB framework there are as many ways of educating the architect as there are flavors of Baskin Robbins. This diversity should be welcomed by

educators. While there is some truth in the charge that educators have not done well in ensuring that their charges can read and write as well as they draw, it is not this shortcoming alone that has led to the diminishing of the architect's role and earning power in society. Neither is it the fact that liability insurance has encouraged the profession to rapidly shed any or all responsibilities that might lead to expensive law suits. Rather it is the abandonment of the kind of scientific or technical knowledge most valued by an increasingly materialistic society. This has relegated the architect to a role of artist serving a mercantile master while other less qualified and even more narrowly educated "professionals" benefit from this reticence to pursue aspirations or opportunities for an improved built environment on a wider scale.

All the more surprising in these circumstances that educators turn away from what they see as the crass vocational needs of the "business"of architecture in favor of a model that concentrates more on the classical goal of training the mind and producing the fully educated person, as if unaware that the early twentieth century distinction between a professional education and liberal education may today be specious. Sir Eric Ashby for example, thought that they can be and often are the same thing. And according to Ralph Barton Perry:

> There is . . . no subject of study whatsoever that may not be illiberally taught or illiberally studied. It should not be forgotten that what is called "pedantry"was invented in those studies which are classified as liberal.

The very nature of the subject matter of architecture demands that it be taught as a liberal art; and if it is illiberally taught, that is a problem of the teacher, not the subject or curriculum. The (liberal arts) teacher should "inculcate a point of view, a sense of perspective and tolerance, a breadth of sympathy and an ability to see the relatedness of things in balance and proportion". This can certainly be achieved through architectural education.

The current move to require a liberal arts degree as a prerequisite for entrance to architectural schools would appear to be motivated more by educators seeking to legitimize their place in the university, than to improve the quality of those graduating in architecture. If indeed an improvement in the quality of architectural graduates is the aim, the answer lies within the current structure of education and there is absolutely no need for Plato's "clean canvas". The requirement of a liberal arts degree before studying architecture is not necessary since the subject matter of architecture is not specialized. This is not to say that Bloom's attack on relativism and his advocacy for the "Great Books" approach is without merit. Nor can one deny the important role of the humanities in a democratic society. Architecture after all has, at its highest level, a secure and honorable place in the humanities.

If the three-year graduate program is as successful as its proponents claim, this has as much to do with the interdisciplinary opportunities offered by having liberal arts graduates work alongside graduates in architecture, as with any other factor. On a larger scale the whole idea of interdisciplinary research and the development of hybrid programs in the sciences and engineering are current and interesting developments in most major universities. These developments occur not as a result of some master plan, but because important problems elicit the spontaneous action of thoughtful people from different disciplines with open minds.

Architecture schools should take advantage of this trend of breaking down the walls of established disciplines, but at the same time remember that it was specialization that brought forth the electronic revolution that made it all possible.

"Communication Approach in Architectural Education"

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Background

The idea advocated in this short essay is a communication approach to architectural education, which is taken from the author's books on this theme, *Architecture as Environmental Communication* and *Design as Aesthetic Communication, Deconstruction of Formal Rationality*. This theme brings design and specifically architecture in phase with contemporary views of the universe, society, and culture. This communication approach to architectural education proposes a unified theory of knowledge reflected in syntheses of those many disciplines involved in measuring, tracing, and/or documenting the man-environment relationship. Architecture as communication assumes information exchange to be essential in any human interaction and its manifestation embodied in environmental, behavioral and symbolic forms.

Within an environmental communication system an originator of messages can be either man or the environment. These messages have three bases: (1) Environmental (physical, natural); (2) Behavioral (sociocultural, physiological); (3) Symbolic (associative meanings relative to environmental and behavioral messages). Man's interaction with the environment is then seen as describable in terms of either "event patterns" or "object systems" in which "matter" is considered analogous to the physical aspects of human life and "energy," the social aspects of human life.

Architectural education, historical reference

Let me make a brief reference to the recent history of architectural education and mention two broad categories of criticism. In the 17th and 18th centuries, architecture was more affiliated with the arts and specifically with plastic arts. In Europe, architectural educational systems were housed in art academies. Architecture was among the most prestigious of professions. Later in the Bauhaus, although the situation was still the same, more emphasis was placed on objectivity relevant to technology and craftmanship. Later on, schools of architecture in the United States and Europe were founded on university campuses during the 19th century when many great breakthroughs took place in the physical and natural sciences. At this time, while practitioners were doing fairly well, academicians were beginning to feel more and more inferior to scientists. I believe the case remains the same today. Although the initial situation was due to quantum jumps in scientific discoveries and the dominance of philosophy of the empirical approach, the artist and the architect still have not claimed their place in the academic world. This weak position stems from two types of problems in architectural education: (a) much of existing education is geared to production of individual designers equipped with the power of creating artifacts; (b) absence of interaction between architecture and other disciplines and the general stream of knowledge.

Comparisons between architecture and medical science have been made over and over. Architecture, like medical science, deals with very complex matters, including those that are physical, natural, biological, social, cultural, psychological and technological. Therefore, in both education and practice, many layers of activities should be defined, ranging from research to education to practice and from those which are philosophical to theoretical to practical. There should be many specialties that link with various branches of sciences and arts. Architecture can no longer be confined to the limited boundaries of a single profile of a "generalist" dealing with everything from a A to Z.

Proposed model

The adoption of a communications approach to architectural education would have several benefits. The communications model provides a commonality of theories and methods throughout vari-

ous disciplines; a unification of the physical and non-physical, qualitative, and quantitative aspects of the environment; and takes advantage of technological advances and information systems.

An environmental communication consists of a combination of three sets of components — objects, events, and association (meanings). Thus, we would be dealing with three types of education which necessarily operate on three levels of abstraction relative to those characteristics. The first type of transaction involves physical realities or objects; hence perception of shape, form, and physical contacts are the main part of the educational process. The second type of transaction deals with activities and events. The events are a manifestation of some change of state in the environmental system where an understanding of human behavior and other life form is the main target of the educational process. The third type of transaction deals with associations — all possible mental conception products of a combination of all the above mentioned transactions, or one's description of such forms, both in space and time where abstract thinking and developments are the targets of the educational process.

Within this educational system there are three domains of intellectual intercourse, experience, and knowledge: (1) the realm of concrete and physical realities; (2) the realm of rationalization of behavior, reason, and logic; (3) the realm of abstraction and association.

Within this model there are five types of architecturally educated persons: the research-oriented, the generalists, the professionals, the specialists, and the technicians. They would be educated in one of four types of architectural schools: comprehensive, professional, specialized, local.

"The Disciplined Imagination: A Case for the Emancipation of Architectural Education"

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These thoughts have their origin in reexamining the concept of a "liberal education" for the architect. The traditional ideas embodied in such a liberal education were connected with a concern to liberate the architect from the too narrow confines of a purely professional education. Traditionally, such a liberal education provided a base of liberal arts subjects upon which the structure of professional education was then built. In other words, the theory was that the professional architect would be better prepared as a result of having a broader basis for his education.

In the spirit of this theory the term "liberal" in this inquiry came to imply something truly liberating or emancipatory. What is at stake, therefore, is not the discovery of a formula by which we can simply add "X" to achieve a better product. Rather, our interest lies in a more pervasive process that avoids any such limited result, seeking instead to generate a field of free exploration. Such an approach will depend upon our ability to redefine the entire scope and structure of architectural education.

Our starting point should be the creation of an environment in which the well-informed, inventive, free-thinking architect can be educated. To achieve this will involve the redefinition of architectural education, both in terms of the curriculum and its implementation. The making of architecture is complex and difficult: it involves the mastery of a great deal of knowledge about space, form, materials, construction and assembly, as well as an understanding of life-patterns and social and cultural values. Vitruvius already identified most of the categories of architectural activity in which we must still engage. But today we can no longer learn all these skills from one master, nor is there one single source or pattern book upon which we can depend as our text.

Architecture bridges between the virtual world of ideas, and the real world of buildings being used by people; then back again between the world of technique and construction, and that of representation and meaning. As a framework for our lives and dreams it mirrors both the commonplace and the extraordinary, offering both a material presence and another mysterious dimension beyond mere form. To make these connections in space and time, architecture therefore requires its own language of inquiry. The structuring of this language should be the central purpose of architectural education.

The process of architecture involves progressing from abstract ideas to material realizations. It is the function of the language of inquiry in architecture to promote a disciplined imagination. Drawing is the basic technical skill used by the architect. But the emphasis here is not simply on the "drawing" of something. Rather it is concerned with the "drawing together" of things towards the formulation of buildings and places. The language of inquiry in architecture must enable us to identify our terms of reference. It is these terms of reference that the architect will draw together in the design process.

How, then, shall we form our language of inquiry? In the first place it must identify a comprehensive range of trans-disciplinary references. This is necessary to avoid the prejudgment of issues and "jumping to conclusions". The language of inquiry must permit changes of attitude and expectation in those who use it. These possibilities for change are essential to the adult intellectual process. In design we move from the general to the specific, from outline boundaries to detailed centers of focus. The need to differentiate between these aspects, devoting equal attention to a variety of factors, will involve changes in awareness on the part of individuals. It is difficult for us to make these adjustments in isolation. Within a structured "team" or class, however, we can exchange roles and information, participating more fully in the dialogical

process of design.

Because of the significance of drawing together, and the desirability of teamwork, we have chosen to redefine the design studio as the center of a comprehensive architectural education. The free-ranging nature of the studio already permits a wide variety of educational strategies -- dialog, seminar, teamwork. What is proposed is a discipline to facilitate these varied strategies, to elaborate the language of inquiry by inclusion of the social sciences as well as cultural components. In other words, this discipline would be trans-disciplinary, to promote greater freedom of reference within the language of inquiry.

The new concept of the design studio is as a seminar/arena, in which problems are assembled, discussed and "acted out", before the various threads of possible solutions can be drawn together. The seminar format has been conspicuously neglected in studio teaching, although it provides a natural focus for the design studio process. By supplementing the traditional one-on-one relationship in studio teaching, creating in addition an open educational arena, the seminar format would facilitate a full exchange of knowledge, information, and speculation. But to ensure the optimum scope of the seminar technique, it is necessary to broaden the base of inquiry in architectural education. This would involve the use of specialists and texts from the social sciences and the humanities, to provide a trans-disciplinary approach to structuring the language of inquiry. We would then have to structure the curriculum so that this new language of inquiry becomes truly emancipatory.

The new curriculum would have to promote examination of a broad range of topics and related texts. These must reflect the variety of factors that impact the use and experience of buildings -- social, cultural, economic, functional, environmental and technical. Although technology will play its appropriate part, it will be through the expertise of the various specialists that a comprehensive context for design will be worked out. By drawing on, and drawing together the diverse viewpoints and relevant texts, it will be possible to make appropriate bridges between disciplines, and between ideas and artifacts.

The construction of the language of inquiry is like the invention of a game. We play with language to allow our thoughts to find expression. The link or bridge between thought and language is to be found in "word meaning". If we are able to structure a trans-disciplinary language of inquiry for architectural problems, we would have chance to redefine those problems. In our "play" to invent the language of inquiry this redefinition will be part of the objective. This process of invention, the redefinition of context, will reveal the complexity of the game in which we may determine new terms of reference. Within this "game" and the construction of scenarios to explore design issues will lie the contextual secret of making an effective language of inquiry. It is through this sense of play that we will be able to overcome obstacles between disciplines, creating bridges of thought and language.

Our colleagues in other fields may admire the scope and freedom of the design studio, but they stress the failings of its very limited objective -- an intermediate product we call "the design". We can overcome this limitation by changing the focus from this intermediate product to embrace the comprehensive "design field". It is seen that this would follow naturally from the deemphasis of the act of drawing as an integral part of that intermediate process, concentrating instead on the "drawing together" of more comprehensive information. This would allow students to modify their expectations, using the language of inquiry to address the whole design field.

Although the present form of the design studio provides a reflective environment for inquiry, its structure is essentially undisciplined. This lack of rigor results from both a shortage of information, and the failure to apply an integrated method of study. By combining the advantages of the present tutorial system with the seminar structure based on multi-disciplinary imputs, an effective approach

can be developed. This will be both more methodical in its rigor, and more emancipatory in its operation.

By accepting the potential of the studio model as the basis for a new seminar/arena it would be possible to focus all design inquiry through a comprehensive drawing together of resources and information. This would offer an effective alternative to our traditional view of the benefits of a liberal education. At the outset, the seminar/arena will have the advantage of freeing students from the vestigial conflict between design and other disciplines. The concept of the "disciplined imagination" is based on this freedom, the emancipation that would result from the drawing of a comprehensive picture of architecture through an extended language and field of inquiry.

Through this disciplined imagination, design would cease to be an exclusive activity, becoming instead inclusive of all human needs and aspirations. No longer merely a technique for generating an intermediate product, architectural education could become emancipatory to the extent of seeking all the social and cultural roots that bring true life to architecture. Through such a disciplined imagination it will be possible to create better-informed and more effective responses to human needs in the production of architecture.

"Aspiring to Liberal Education"

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Associate Professor of Architecture
University of Kansas

A liberal education entails the acquisition of habits of thought and speech essential for the individual's participation in the maintenance of a democracy. The "classic" concept of a liberal education had two main emphases. The first included correct use of language (grammar), clear thinking (logic), and persuasive expression of ideas (rhetoric). It developed the ability to reason and debate. The second area of emphasis was mathematics (arithmetic, geometry, astronomy, and harmony). The Greeks believed "divinity" was revealed in the mathematical structures. They abhorred practical application and pursued knowledge purely for enlightenment.

Today's liberal arts curriculum slowly evolved and is typically organized into three categories; the humanities, social sciences, and natural sciences. The accumulation of knowledge has resulted in specialization for the sake of expediency and our economic orientation has made practical application a concern of education. Professional schools, such as architecture, assume that special skills, techniques, and practical knowledge be acquired, appropriate to the profession; thus a pragmatic component emerges.

This pragmatic component is often criticized by advocates of liberal education, but scholars such as Alfred North Whitehead (*The Aims of Education*) are quick to recognize that the aim of education is its application. Whitehead said, "Education is the acquisition of the art of the utilization of knowledge". He makes the distinction between pedantic education with "inert ideas", which is useless and harmful (*Corruptio optimi, pessima*); and true education in which ideas are discovered, tested, thrown into new combinations, and utilized. Hannah Arendt (*Thinking and Moral Consideration*) was fascinated to realize that Adolf Eichman's demeanor during his trial indicated that, although he was intelligent and supposedly educated, he was unable to think. His education had consisted of facts and inert ideas and he seemed unable to make judgements and associations. He had not engaged life's difficult questions. John Henry (Cardinal) Newman (*On the Idea of the University*) was an advocate of liberal education because he understood that it made the person more adaptable and better prepared to respond to the changes one encountered in one's lifetime. A purely technical education did not provide this flexibility. Richard I. Evans (*Jean Piaget, The Man and His Ideas*) quotes Piaget as approving of Maria Montessori's methods for their focus on activity, but deploring her use of standardized materials. Piaget felt the child should be free to create and experiment, and the teacher should offer situations presenting new problems, following one from another. Liberal education endeavors to instill a thirst and enthusiasm for learning. It allows the student to determine the path while the educator acts as guide, illuminating possible directions.

Several problems arise with today's concept of a liberal education. Its content needs to be expanded and its thrust redefined. First, it is a product of Western thought and tradition. We often define its content too narrowly and apply its ethical systems to cultures that do not share common values. A logical discourse and a Zen Buddhist's contemplation of enlightenment have little in common, but represent alternate world views which we need to understand. Liberal education must encompass the ideas of other cultures. It is no longer sufficient to have knowledge of only Greco-Roman and Judeo-Christian thought. The task of becoming liberally educated has increased significantly, but so has its importance. Today's architect must have knowledge and understanding of more than Western civilization.

The increase in knowledge, technnology, and communication has brought about rapid change. These changes have affected all cultures. The "accepted truths" must be translated into new paradigms. We have seen that this is the purpose of liberal education, but cultural damage is so great

that it places great urgency on the resolution of the great issues of human understanding. E. F. Schumacher in his book *Small is Beautiful, Economics As If People Mattered* quotes R.G. Collingwood:

> It was not barbarian attacks which destroyed the Greco-Roman world . . . The cause was a metaphysical cause. The 'pagan' world was failing to keep alive its own fundamental convictions, . . . it had become confused as to what these convictions were . . . If metaphysics had been a mere luxury of the intellect, this would not have mattered.

The problem of restoring fundamental convictions is extremely critical because architecture normally responds to them, and forms professional values upon them. Without this social consensus the profession flounders. Design becomes shallow and stylistic rather than significant. The social purpose of architecture is especially concerned with metaphysical value, the integration of self, and the production of aesthetic symbols which serve to orient society to these values.

Modern education becomes problematic because its conduct is highly institutional and businesslike. Its progress is linked with economic considerations of time, money, and resources. In this framework these often outweigh less easily measured values, ethics, and ideas. The hierarchy of administration, with its checks and protocol, inhibits the risk taking and experimentation necessary for education's adaptive development. The architect as employer and the student as potential employee have pragmatic concerns. They oppose increasing credit requirements or replacing practical topics with more theoretical but thought provoking ones which speculate upon open-ended questions. Limited resources force the architecture schools to accept or reject students on the basis of test scores or other narrow criteria. We need to consider whether the architect, as a type, exhibits any definable set of talents or personal attributes, or whether the profession, and society is best served by more representative enrollment.

Should we seek to secure liberal education in architecture? Certainly, but doing so in a meaningful way will require much definition, debate, and conviviality. What would constitute a liberal education today? What are the fundamental convictions upon which we can define the goals of architecture? While we seek these answers we must act. The only certainty we know is change. Facts quickly become obsolete. The formal education must impart sufficient skills so that graduates can become effective in their lives, not just their work. The education that prevails is one which develops the ability to reason and the thirst for learning that is lifelong. We want to create a thinking person, one who has acquired the habit of solving problems creatively, is independent in thought, is comfortable with ambiguous issues, has the courage to take risk, and exhibits strong ethical convictions. A person with these abilities is adaptable. Perhaps liberal education is more dependent upon attitude than curriculum.

"On the Liberal Education of Architects"

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Liberal education is a term that carries with it a long history and many meanings. Education progressed from the property of the few, to a democratic ideal, to be later transformed again into the domain of the few. As to architectural studies one needs to remember that the root meaning of *artes liberales* , the genre to which the discipline belongs, is intrinsic to the identification of an elite with leisure to study. In the last decades, the cost of higher education has increased dramatically equating time for leisure with the ability to afford. Education was not intended for everyone.

Today, as in the 13th century Europe, the growing importance of specialized graduate disciplines and the reduction of arts education reflects an eagerness to move on quickly towards specialization. Some professional schools are advancing educational reforms intended to increase the number of years needed to fulfill the requirements for a degree. It is assumed that more years of study and more specialization will render a better professional, although as yet there has been no study that proves or disproves this hypothesis.

Education becomes a commodity when universities are defended on utilitarian grounds. University administrators live in constant fear, waiting for the time when curricula will come under "heavy fire" from critics demanding only those courses related to post-graduate employment. We see institutions justifying their operation in terms of the national economy . We observe universities placing more resources into the task of recruiting minorities and non-traditional students, because in the next millennium they will be needed to satisfy the demand of the labor market. Nowadays nobody would dispute that the national market needs to remain competitive *vis-a-vis* the international economic sphere.

Architectural schools and the profession exists within the present trade and commerce conditions. However, the profession still calls upon the Roman definition of architecture as a liberal art when needed. The liberal art ideal is fed daily to students in the form of a motto: "architecture is not building." This insistence is intended to reinforce the distinction between intellectual abilities and manual skills. It also sets the tone for placing architecture within the three types of higher education: it is more a liberal arts professional education than vocational training.

The paradox is that while architecture is labeled as a liberal profession, and according to Andrew Saint "attracts people whose thoughts transcend self-interest," practitioners have adopted an entrepreneurial approach guided by the standards of business. Ali Faramawy concludes, in his dissertation on the education of architects, that schools of architecture have taken advantage of this reality by transforming themselves into competing enterprises where teachers take up the roles of clients and employers.

The signs of entrepreneurship are everywhere. For instance, learning a second language is necessary to be able to offer architectural services abroad, rather than to understand other cultures and ways of thinking. The goal is, quoting Alvin Gouldner, to be "a modern intellectual who is able to participate in a world-wide culture increasingly separable from specific local contexts," in order to do business.

Critics identify the schools of architecture as the source of some of the problems of the profession. In 1984 James Wines blamed the schools for graduating architects that are technically skilled but unable to confront complicated social and psychological issues. Yet, others criticize schools for failing to incorporate a more technical education. Indeed, the crux of the matter is not the number of technical credit/hours included under a given study program, but rather the perspective

from which architecture is defined. For some it is an inherently multidisciplinary endeavor, for others it is disengaged from social purpose and context.

Practice receives from the schools of architecture "products" that disseminate, quoting Rafael Moneo, the results of new approaches. By the same token academic mass- production provides practitioners with a large pool, according to Robert Gutman, of highly-educated cheap labor. This leads one to conclude that schools in general have been successful in selling the liberal-intellectual-professional model.

Looking from the perspective of the students and their learning experiences in the schools of architecture, the reality is different. In a 1986 study, Kathryn Anthony found that the format of the jury system was ineffective as a learning environment, although it is still widely practiced. The design studio is based on ideas of freedom and responsibility, but its reality is more a setting for instituting punishment and creating dependency. The creed of pluralism is disguised as openness. In the end, only a small percentage of the architectural graduates achieve professional status. At issue is not the number of courses taken, but the quality of the didactic experience.

Even facing a sea of contradictions, the architectural subculture presents a unified front to outsiders. Everyone implicitly agrees in maintaining the status quo. If not, why are there no underground movements, rebel or deviant schools of architecture? Why does there seem to be no conspiracy?

Questioning the liberal education of architects is a dead end discussion. Increasing the liberal arts content in the curriculum implicitly supports the present state of things. The key issue, as Peter Forbes contends, "is the form which understanding takes, rather than the content of the material to be learned." That format is fixed by the standards of the culture in which it is set. In order to change one, it would be necessary to change the other. In essence, the question is not about liberal education, but about what is education and to whom should it respond.

"Thoughts on Architectural Education"

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In the past twenty-five years many complex and interconnected issues and problems in architectural education have arisen, which are not easily dealt with and which, while presenting difficult challenges, are indeed solvable, and necessitate creative and farsighted solutions from all of us. The profession of architecture which we attempt to serve, and whose participants we purport to train, has grown at an exponential rate in technical and societal content and inherent overall complexity. These rapid, sometimes jolting, sometimes subtle changes in the profession, along with many quite unrelated changes in higher education, have had many dynamic effects on architectural education. Our planning efforts, along with resources, both human and monetary, have not been able to anticipate these changes, but instead invariably lag behind developments coming from the profession. Resources have not been in place when and where needed, but rather they seem to be assembled, hurriedly and disjointedly, and after the fact.

Schools of architecture are faced with the task of delivering an increasingly sophisticated professional education that can keep pace with the expanding network of fields which deal with the orderly building of the environment. Schools of architecture are redesigning an elaborate and confusing array of new degree programs in an attempt to find a more coherent and adaptable path through continued growth, accelerating change, and expanding roles of architecture and many of its closely related fields. The new programs, with their resulting expanded curricula, attempt to address as much of the profession's burgeoning complexity as is practicable. Many of these new labor-intensive degree programs and options often strain the resources of the more traditional programs. Often this exacerbates the already difficult task of delivering to the profession individuals who possess more than mere threshold knowledge in many traditionally strong professional subject areas — design among them — which the profession considers essential to the practice of architecture.

Another impact of these new programs, and their necessarily expanded curricula, is the overload on faculty who are trying to cope with a vast amount of new knowledge which continually grows in scope and content. The steady increase of professional courses in the curriculum has eroded the traditional core elements of the curriculum. For this reason many schools of architecture are again rethinking the length and content of their programs. Unlike the period of the early 1970s when programs were being condensed at the insistence of the profession, a response to extremely heavy professional growth and activity, today's programs are being expanded in length to reinforce some of the core elements adversely affected by the inclusion of additional professional content areas. Many schools are becoming weary, and wary, of constantly expanding the required professional content of these programs. We are beginning to see a definite backlash to this overload of overt professional pressure and control.

In a not-so-quiet-revolt in defiance of these external pressures from the profession, and their various governing bodies — AIA, NCARB, and to a lesser extent NAAB — many faculty are developing understandable "attitude" problems relative to the profession. They are initiating aggressive retaliatory stances, strategies and even somewhat anti-professional programs which seem almost designed to exclude the profession and professional subject matter, in war against the seemingly endless lists of professional "musts." Academicians, even of the lesser architectural variety, unaccepted by the true academicians of the liberal arts world, are a very independent sort, not inclined to respond to real or imagined control from any quarter. Many faculty view the profession as an ominous and very distant force, which has already had too much voice in their deliberations.

It should also be noted that in the last twenty-five years the complexion of faculty in architecture schools has altered drastically. Many faculties have a much lower percentage of licensed architects than they did two decades ago, for a variety of reasons, and some of them view the professional subject matter in the training of architects almost with disdain. These faculty tend more toward academic purism and elitism, and define architecture as an exclusively academic discipline.

Architecture schools become highly elevated by the diversity among the faculty, a tuned balance among generalist practitioners, specialists in areas of curricular need, and academicians, both generalists and specialists, the so- called conscience of the group. This desired mix of difference is what infuses tremendous vitality into the educational process. We have come to expect excellence in the training of architects almost as a function of collegial faculty diversity. Unfortunately, when faculty diversity turns to faculty divergency, and individuals' predispositions are aimed at becoming the whole, then the whole is lessened, if not totally lost. The educational process becomes muddled and slowed, instead of gaining in momentum, increasing in vitality and achieving clarity.

Faculty members in schools of architecture are necessarily diverse because of the wide range of subject matter confronting the profession. It should be remembered that they are also part of a unique and varied team of professionals, and that without the contributions of each individual member, today's sophisticated architectural education would not be possible. We should remember also that each member of that team comes armed with an appropriately formulated, properly positioned, and highly defensible mind set, which is a function of his or her training and career. If we are to succeed even moderately, we must allow for our differences with respect, but not awe, and allow each other to develop in our beliefs, and permit each other to utilize our individual gifts to the fullest to accomplish the common task of delivering the highest level of architectural education possible.

"The Practice of Placemaking and Placetaking as a Liberal Art"

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The practice of making places and the human condition of *takingplace* establish the conditions for a liberal education useful for architects and all university students. Heidigger believed that

> the way in which you are and I am, the manner in which we humans are on the earth, is Bauen, dwelling. To be a human being means to be on the earth as a mortal. It means to dwell... this word bauen, however, also means at the same time to cherish and protect, to preserve and care for . . .

Placemaking and *placetaking* frame the condition in which people, with and without the intervention of professionals, consider their own dwelling. An assumption in our thesis is that people seek to locate themselves in relation to places and to the other people who participate in their experience of places. It is through the exploration of this assumption, its implications for the practice of *placemaking* and *placetaking* and for the potential role of place for the project of human emancipation, that we find a partial basis for the assertion that architecture offers a vehicle for liberal arts education.

Placemaking and *placetaking* are about the actual creation of the material world through construction, renovation, preservation, planting, cultivating, demolishing and all other acts which interface with the physical world. It is also about the way in which the "mindsphere", a term created by Thomas Berry, interfaces with the physical world to interpret, transform, re-search, animate/inanimate and otherwise interact with the world-as-is and our actions in it. It includes those acts of facilitating, managing, repairing, and maintaining by which we individually and collectively take care of our world. It is also about the ways in which we as human creatures create social and cultural structures through which we make and take place, and thereby develop relationships and/or non-relationships with each other and the world.

The language of making and taking emerges as a recognition that the professions who regard place as a primary actor in their practice can be said to be relatively more concerned with making or taking. For example, architects, planners, landscape architects design/propose places; they make places. Facility managers would be more concerned with taking and maintaining place. However, the distinctions between the making and taking are artificial, especially when we consider the activities of placemaking and placetaking are characteristic of all human beings and not the privileged occupation of a select few. Some activities are more about "bringing into being" and some are more about "accepting or absorbing" although all acts may involve both.

In the current discourse in architecture regarding the epistemological underpinning of our profession, there has been an explicit attempt to deal with the "difficult particulars" of architecture. Scholars have been working rigorously on the phenomenology of place as part of the way they might attend to the uniqueness of their field, thus avoiding the use of inappropriate methods for knowing borrowed from the natural and social sciences. As a profession we are seeking to engage architecture directly rather than through the abstractions which were attributed to it.

These explorations into the phenomenology of place have thrown into question what designers and place managers have presumed to know through their professional education. This inquiry has also challenged our knowledge and it has problematized how we and others might usefully "come to know" in architecture; that is, receive, construct, and manipulate knowledge. The professions of architecture, landscape architecture, and planning and the use of their professional name as nouns, have become the abstraction getting in the way of

addressing the more difficult and complex particulars of making and taking places . . . of dwelling.

It is ironic that these explorations into the experience of place are breaking down distinctions between abstract categories of knowing. Concepts once thought to be clear and in the purview of one profession or one discipline are being challenged. It appears that *placemaking* and *placetaking* are central to the full experience of being in the world and to the projects of our lives. Through an exploration of the pragmatic and concrete reality of place, without some of the preconceived concepts borrowed from other disciplines, we find that we no longer need to dismiss the insights of other practices or disciplines. On the contrary, having established the place and the experience of it as the basic unit, all professions engaged in the making and taking of place are obliged to take their exploration and experience of place wherever it may lead them. The have the opportunity to allow all practices and disciplines to contribute where they can. It is the nature of this interdependence which establishes the imperative for its use as a vehicle for liberal education.

Placemaking and *placetaking* are inextricably linked to each other, and to fundamental questions of human competence, organizational development, and to the broader but related project of human emancipation. It affords, quite literally as well as metaphorically, a place to practice self-determination and to discover its potentials. Such practice establishes the conditions which facilitate human competence, the human condition of commitment to action, the development of relationships between people, as well as between people and their physical settings. *Placemaking* and *placetaking* can enhance the fundamental democratic and emancipatory projects of our lives.

"Some Notes on the Liberal Education of Architects"

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This essay responds to the questions of whether architecture students can gain a liberal education through the study of architecture itself; whether architecture students should acquire a traditional liberal arts education before entering a professional program of architectural training; and how doctoral programs should fit into architectural education.

Let us begin by clarifying a key assumption: it is assumed that a liberal education is desirable for architects; the pending question is how to provide that liberal education. Next, let us consider what a liberal education might be. The Oxford English Dictionary suggests that a liberal education is directed to a person's general intellectual enlargement and refinement, as opposed to the restricted requirements of technical or professional training. The OED does not specify what general intellectual enlightenment might be, but others have made the attempt. Bertrand Russell suggested that education should attempt to help people cultivate sensitivity, courage, vitality, and intelligence; Allan Bloom suggested that the educational process should provide a common body of knowledge for all participants so that they would be able to function together; the author has suggested elsewhere that the aim of education should be to help people recognize and cultivate their full potential, where the term "full potential" was defined as the ability to think, feel, perceive, and imagine both individually and in groups. In all these conceptions, the notions of flexibility and breadth are important. A liberal education should provide its participants with the flexibility to understand and work with a wide range of things, people, and events. Thus the hallmark of a liberal education appears to be breadth of comprehension.

The hallmark of a professional education appears to be somewhat different. It is suggested that the professions can be largely distinguished by the means through which their solutions are produced or expressed. For example, architects typically produce habitable arrangements of physical material in unique locations. In contrast, doctors work through the medium of warm bodies, while physical planners often work through legal documents consisting of generalized design principles such as urban design plans. Thus, the hallmark of a professional program appears to be the mastery of a specific medium.

Ideally, a full professional education would have the hallmarks of both liberal and professional programs: alumnae should be able to comprehend different world views and also should be able to implement a specific type of solution. The question is: can both aims be achieved through the study of the specific solution type alone?

There was, in 1969, a very important paper which addressed this issue in an architectural context. The paper was Robert Hershberger's study of the effects of architectural training on judgments of goodness, pleasantness, and such. He found that there was a substantial divergence between the evaluations of architecture students and the evaluations of other people; moreover, the divergence increased with the amount of professional training a person received. These and other findings suggest that a major aim of a liberal education - breadth of understanding of different value systems - is not readily achieved through the study of architecture alone. In fact, these findings would tend to suggest that design training might tend to block the ability to comprehend multiple world views. Thus, it would seem prudent to doubt whether students can gain a liberal education through the study of architecture itself.

To the best of the author's knowledge, no one has actually tested the converse question: does a liberal education tend to block development of professional abilities? Perhaps some other conference participant has evidence bearing on this question.

Until such evidence is available, it would seem prudent to suppose that architecture students should acquire a traditional liberal education before concentrating on professional courses.

Let us now turn to the third essay question: how should doctoral programs fit into the liberal/professional program? A study of nine doctoral programs in architecture (University of California, Carnegie-Mellon, Cornell, MIT, University of Michigan, University of Pennsylvania, Princeton, Rice, and Texas A & M) suggested that the bulk of the doctoral work was accomplished outside of the architecture curricula. One reason why doctoral work should be largely outside the architecture curriculum is that while the subject (architecture) may be the same in professional and research programs, the goals, media, and processes are different. In the author's view, the goal of a professional architecture program is to help people produce better buildings, while the goal of a doctoral program is to train people how to enhance the cumulative intellectual tradition by creating, discovering, preserving, or communicating knowledge. The medium of knowledge per se is a different medium than of architecture: the product of a "knowledge work" is typically a string of words or mathematical symbols about generalized concepts, as distinguished from a drawing of an organization of material in a unique location. The processes of research and architecture differ: epistemologies which support coherent intellectual traditions are fundamentally different than the process of individual artistic intuition, for example. All of these distinctions cause major changes between the operations of architectural design and doctoral-level research. For these reasons it would seem that doctoral-level work should be outside the normal liberal/design curriculum. Whether liberal or professional training enhances or inhibits research abilities remains to be demonstrated.

The gist of this essay is that the specialization necessary for professional architectural design is quite different from (and in some important ways may actually inhibit) the functions of a liberal education or a cumulative intellectual tradition. Thus, insofar as inferences can be based on 1000 words or less, the recommendations of this essay are: (1) that architectural students should acquire some liberal education outside of an architectural curriculum before concentrating on the professional classes, and (2) that the bulk of the doctoral work should also be outside the architectural curriculum. It might also be noted that some empirical work on the respective interactions of liberal, professional, and research education would be useful in formulating new architecture programs.

"The Liberal Education of the Architect"

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> *The civic importance of cultural literacy lies in the fact that true enfranchisement depends upon knowledge, knowledge upon literacy, and literacy upon cultural literacy.*
>
> E.D. Hirsch, Jr.

There is a presumption behind the invitation for essays related to this symposium that all architects should have a liberal education, or in other words be culturally literate, either apart from or through an architectural education. This is a pedagogical position with which not all architects or architectural educators would agree, even within the borders of the United States, let alone from an international perspective.

Architectural education today, unfortunately, is tending to drift more apart from the humanities and the social and physical sciences rather than toward a more interactive and dependent relationship to scholarship in these disciplines within the academy. My observation of this trend is based upon numerous NAAB review team experiences with five-, six- and seven-year programs and an awareness of the growing number of new school applications for accreditation from settings other than traditional, comprehensive universities. The five-year and the so-called seven-year programs, most notably, have generally evolved into— or were established initially— as communities apart from both the students and the faculty of other disciplines in the university. The majority of the schools of architecture around the world also treat the curriculum as an independent, rather than dependent education program.

It is my personal and strong belief, however, that the successful practice of architecture within a global community which is experiencing a constantly increasing pace and rate of change can only be successfully conducted from a broad base of education. Social, cultural, economic, political, and technological awareness conditions and informs the foundation of professional education and skills; together, the making of culturally relevant architecture is enabled. The architect as "technician", or the architect as design "stylist" will not, in the long-run, be able to adjust to the changing context of practice, nor will he or she be able to maintain a relevant service profile to the society and culture which he/she professes to serve.

The late Lewis Mumford told us years ago that "architecture is a social art". And, Kevin Roche reminded the leadership of the AIA at the 1990 Grassroots Conference that, ". . . our role is to serve— the community, the society, the client". "Architecture", he said, "had its origins as a social art."

Undergirding this personal pedagogical position are two basic, interrelated philosophical reference points, as the essence of my definition of architecture and the role of architects. First, the works of contemporary architects will be more or less valid and contributory to the society and culture served to the extent that the architect is able to read, understand, and interpret that culture; and secondly, architects are basically distinguishable from other professionals and occupations by their ability to visualize, and make visible for others, non-existent futures (environments and human activity therein). The first point informs the second; the second reinforces the first. The first justifies the necessity of a strong liberal education, and the second the necessity of a sound professional training. Each is dependent upon the other.

The first and perhaps the most critical step to accomplishing a better liberal education for architects is to acknowledge that architecture needs the academy, because the academy is the best source of cultural literacy (and conversely, that the academy needs architecture, because architecture is an im-

portant source of cultural information and influence). If we acknowledge that it is important for the architect to have a good liberal education, then it should follow that we— architects and architectural educators— must acknowledge our special responsibility for determining at least the performance standards, if not also the subjects and content of such education. We have adequately met this responsibility for professional education through the NAAB criteria and procedures, and we continue to evaluate and change the standards for currency. But, we have thus far avoided such explicit attention to the overall education of the architect. We must be as rigorous and self-determinant in one facet of the educational program as the others.

The current NAAB performance criteria are described under four headings: Context, Design, Technology, and Practice. "General education" is described amorphously as constituting "20% of the total hours required for the completion of the program". A more integrative and responsible set of headings, I suggest, would be: Liberal/General Education, Skills Acquisition, Professional/Technical and Science Education, and Visualization/ Design Experience (see the attached graphic). This categorization of the education of the architect would provide the NAAB, and thus the collateral organizations, with a more workable focus when assessing the quality and the content of the professional education component, as well as the effectiveness of the before- and- after linkages to secondary and post-professional settings. In short, we need an evaluation system which can affect the full spectrum of the architect's education.

We have reached the practical limits of the demands upon individuals, their energies, and their financial resources for formal education in preparation for the professions, and especially for architecture, where the early-career financial returns continue to be out- of- scale with the time and effort required for entry into the profession. But, more knowledge is required, if we hope to maintain or enhance our effectiveness and relevance to society. So, what can be done for structural improvement to the process to assure better educated and more effective architects for the future of America and the world community?

It is time that we give more attention in our policies and plans to the whole continuum of education, and to the more efficient allocation of the time and resources available. The potential for interdependence among the educational enterprises in a lifelong context for developing professional expertise has not been realized, primarily because we continue to view education in isolated, and mostly unrelated segments, settings, and content. Up to now, we have planned and operated as if the "Settings for the Education of the Architect" and related primary objectives were independent and unrelated institutions and enterprises. It is also time that we carefully reassess the teaching/learning methods, subjects and content of the preferred curricula.

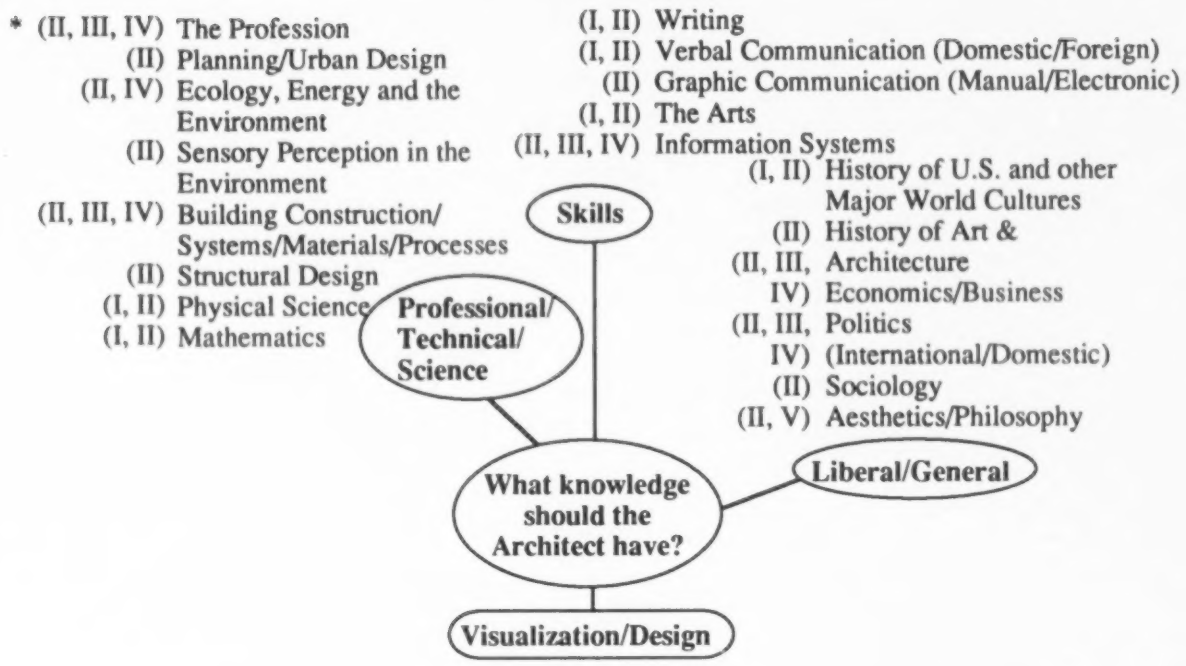
If we would begin to view the years of "professional", or university education as structurally connected, both at the beginning in primary and secondary education and later in professional internship and professional development education, then certain economies of time, focus, and the ultimate outcomes could be realized for the students, the accredited institutions, and ultimately, the profession.

The salient questions before the architectural community of practitioners and educators is not whether a better liberal education is required of architects, but how will it be accomplished. Do we have the courage and the conviction to influence change in the institutions around us in order that we can cause the change of our preference to happen?

> *"As the universal second culture, (the first being more personal) literate culture has become the common currency for social and economic exchange in our democracy..."* Hirsch

If architects wish to be successful, as judged through the response of the public to their works, then they must be able to trade, with confidence, in this common currency.

The Liberal Education of the Architect


* (II, III, IV) The Profession
(II) Planning/Urban Design
(II, IV) Ecology, Energy and the Environment
(II) Sensory Perception in the Environment
(II, III, IV) Building Construction/ Systems/Materials/Processes
(II) Structural Design
(I, II) Physical Science
(I, II) Mathematics
Professional/ Technical/ Science
(I, II) Writing
(I, II) Verbal Communication (Domestic/Foreign)
(II) Graphic Communication (Manual/Electronic)
(I, II) The Arts
(II, III, IV) Information Systems
(I, II) History of U.S. and other Major World Cultures
(II) History of Art & (II, III, Architecture
IV) Economics/Business
(II, III, Politics
IV) (International/Domestic)
(II) Sociology
(II, V) Aesthetics/Philosophy
Skills
Liberal/General
What knowledge should the Architect have?
Visualization/Design

(II) Synthesis, experimentation, process definition, application of knowledge and skills

- The Land
- Cities & Communities
- Buildings
- Interior environments

* The educational settings which would be most efficient for learning:

I. Primary/seconary education
- Fundamental/general education
- College preparation
- Arts and environmental awareness

II. University (non-accredited and accredited programs)
- Liberal/general education
- Professional/careers foundations
- Design competence

III. Professional internship (and cooperative programs)
- Standards of professional practice
- Technical expertise
- Mastery of the state of the profession

IV. Professional development (continuing professional education)
- Specializations
- New applications, standards, and procedures
- Career shifts

V. Post professional education (degree programs)
- Research on new technologies, systems, processes and applications
- Teacher training

"The Architectural Education of the Liberal Arts Student"

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It is fruitful to reverse the issue posed for this symposium: our critical task is not how to bring the liberal arts into architecture, but rather how to introduce architecture into the liberal arts. For undergraduate programs in architecture are aware of the central importance of a broad "well-rounded" education and have the liberal arts integral to their curricula. Unfortunately, the reverse -- that is, an understanding of the importance of architecture as a study within the liberal arts -- is not true.

Let us examine why this is so. The liberal arts curriculum typically consists of an introduction to disciplines of study considered necessary for participation in an active and learned society; courses such as natural sciences and scientific method, social sciences and history, English and foreign languages, and art and cultural ideas. To simplify we could say that the standard Arts and Sciences curriculum claims to espouse lasting ideas of men and women and their relationship within nature and society, the quintessential course of such study frequently being titled "The History of Civilization."

Aren't these courses (with the possible exception of foreign languages, alas!) within the architectural curriculum? Our internal argument is not over the importance of the liberal arts, but rather how best to teach them, and at what time to introduce them into our study.

But, what of architecture, itself, as a discipline? If we consider architecture as, "the built environment" -- the shaped world we live in, manipulated and molded, designed and constructed, by society -- then surely this is a discipline of concern and importance within the liberal arts curriculum. This should be stated more strongly: an understanding of what architecture is, why it is needed, and how it comes to be, is critical for any student interested in being properly educated. For architecture is more than a built artifact. It is the representation of a society's culture and desires. Similar to literature, poetry, art and politics, architecture is a clear indicator of what the society values -- and what it ignores.

However, study of the built environment is not now considered a necessary discipline of learning in the Arts and Science curriculum. Nor is it a concern of those seeking reform and change in the liberal arts. In Allan Bloom's recent scathing attack on higher education, architecture is not mentioned, and E. D. Hirsch's book of cultural listings contains only two architects. This does not suggest the fault lies with liberal arts, but rather with us. We have to recognize this curriculum oversight, and we have to then convince those in liberal arts that an understanding of architecture is germane.

A society which does not understand both the environmental and the visual implications of continued thoughtless construction is committed to a future of endangered health and aesthetical poverty. This can be demonstrated by simply looking at what is happening to our present environment: a continued exploitation of land and resources, development without consideration of any issue except capital gain, and a lack of understanding by the public that if such despoliation continues we shall soon be faced with a built environment that demeans our aspirations and entraps us in a world of chaotic form, without coherent order.

If we can accept the argument that study of the built environment should be within the framework of the general liberal arts curriculum, what should such study encompass and how should it be taught?

First, I acknowledge that describing architecture as being "the built environment" is a definition of larger scope than we normally use. However, engineering as it affects built form, town planning, and constructions of all sorts modify the physical environment we live in and have aesthetical as

well as physical implications. This begins to argue -- again within a larger context -- for two areas of study which might be offered as a two-semester course. The first semester would deal with the natural environment, why we need to modify it, and how these modifications affect that environment. This course would address our concerns of preserving nature, while acknowledging societal need for change.

The second semester would deal with how we actually design the built environment. This subject should be taught by architectural schools as a part of a liberal arts education. It would deal with ideas of excellence in architecture and would explore complex and interesting questions: why do we want to make any 'mark' upon the land? What is design, and how do we all affect its quality? And, what gives order and meaning to our neighborhoods and cities?

This short essay will not outline a possible course content, or how such a course should be taught. In fact, much of what might be included is already being offered in courses presently taught in architectural schools. Exemplary models exist. What is important is to demonstrate for those in the liberal arts that an understanding of architecture is necessary as a core subject, and then for us to fulfill our task with imaginative teaching.

Considering architecture as a liberal arts discipline raises another potentially unsettling question. How many of our own students seriously ask what architecture is? Or question why we make our 'marks' upon the land? One paradox of offering such a course to our students and liberal arts students together is that it might also make clearer that as a society we are all involved in the design of our environment, and that creating architecture is more than being in a studio at 3:00 a.m. and worrying if the design problem can be finished on time.

To summarize: understanding that architecture -- the (well) built environment -- is a liberal arts discipline, is essential to a broad and correct education. Examining how architecture comes to be could produce a society which respects its environment, and improves the quality of its shared aesthetic.

P.S. There is a final disturbing thought: should we not also be leading the effort in establishing an understanding of architecture at the high school, the junior high school, and the elementary school levels? Who else can? Who else will?

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